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Radiant Cooling Pays Off p. 94

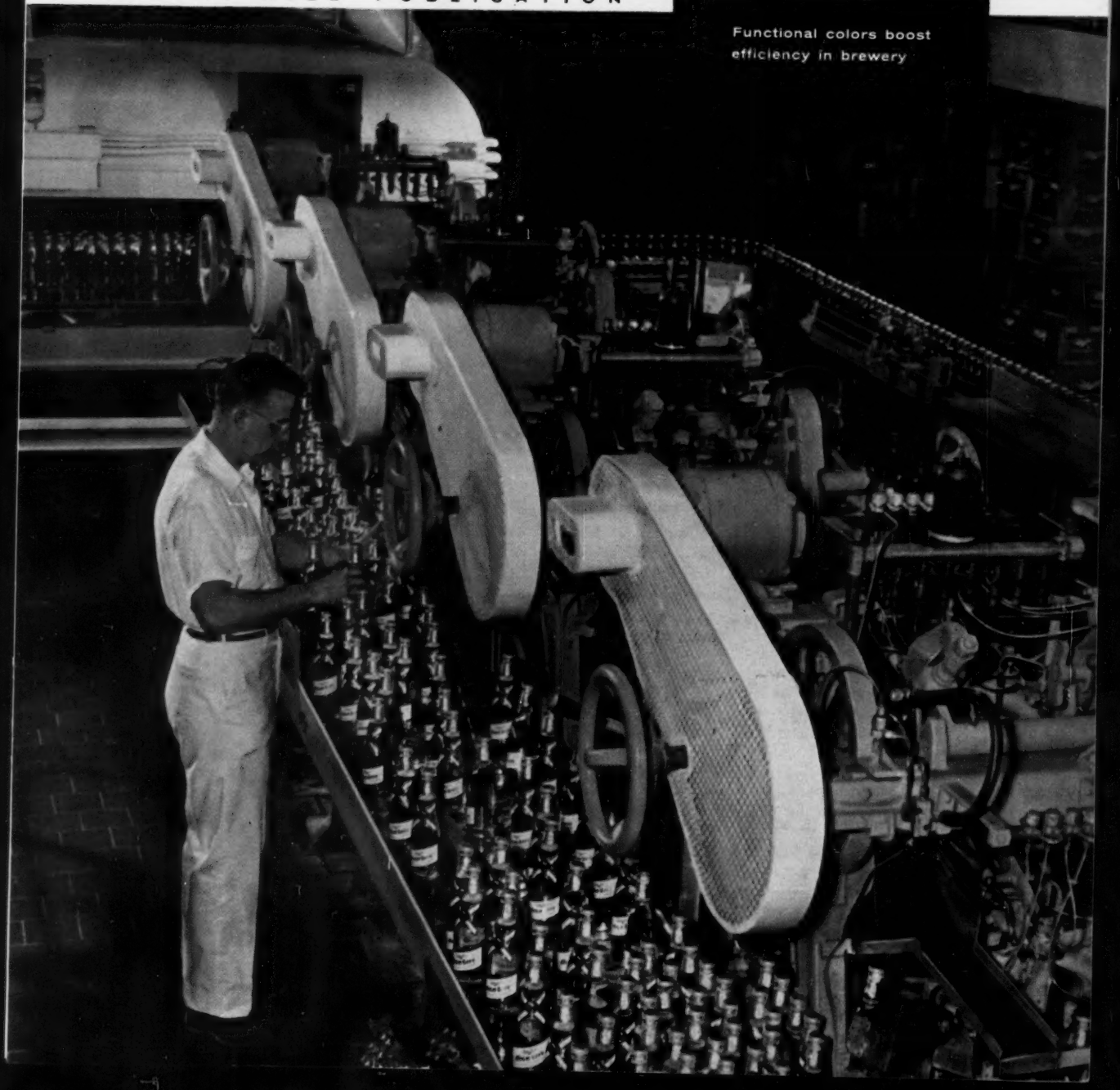
JUNE 1958

$1.00

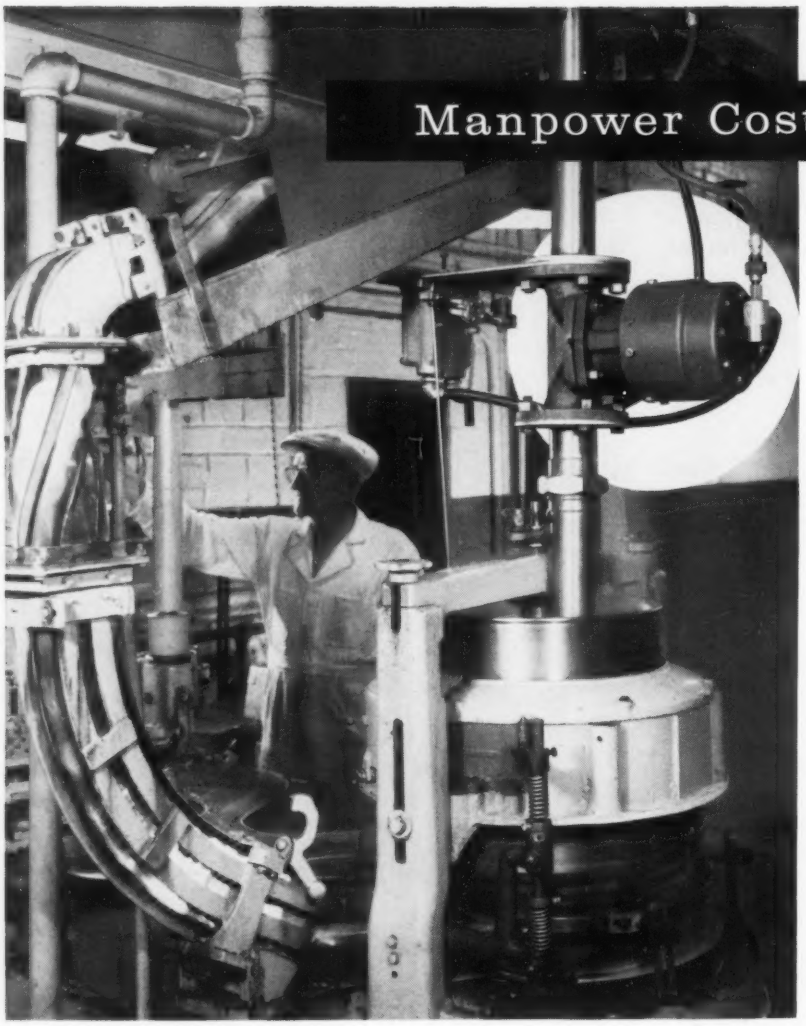
FOOD ENGINEERING

FOR MANAGEMENT IN MANUFACTURING, PACKAGING, MARKETING

A McGRAW-HILL PUBLICATION



Functional colors boost efficiency in brewery



Manpower Costs Cut 50%

by power-operated

GRINNELL-SAUNDERS DIAPHRAGM VALVE

AT ALBERS MILLING COMPANY, A DIVISION OF CARNATION COMPANY. When meat in canning vat is almost used up, float activates an *automated* Grinnell-Saunders Diaphragm Valve. Valve opens permitting a fresh supply of food to come down from floor above. Operation is at rate of 12 cycles a minute, 8 hours a day, 5 days a week — at 190°F.

A *single* stainless steel Grinnell-Saunders Valve, with neoprene diaphragm, has made a profitable difference at Albers Milling Company, Hillsboro, Ore. By replacing a *leaky, manually-operated* valve with a *tight-closing, power-operated* Grinnell-Saunders Diaphragm Valve, Albers ended a messy, unsanitary floor condition. Moreover, manpower costs were *halved* — and production *increased!*

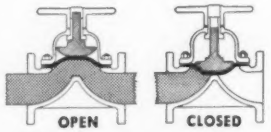
Grinnell-Saunders Valve provides a positive closure, even over solid pieces of food. In addition, there are no pockets to trap solids—no chance of food contamination by product coming in contact with valve's mechanism or lubricant. Maintenance, too, is low. The only part of the valve which ever wears out in normal use is the diaphragm, which can be replaced easily without removing the valve body from the line.

Grinnell-Saunders Diaphragm Valves can be supplied for both handwheel and quick-acting lever operation, as well as power operation. They are available with body, lining and diaphragm materials to meet practically every requirement. For details, write Grinnell Company, Inc., 277 West Exchange Street, Providence, Rhode Island.

GRINNELL

WHENEVER PIPING IS INVOLVED

Diaphragm lifts high for streamline flow in either direction.



Diaphragm presses down tightly for a positive, leakproof seal.

Grinnell Company, Inc., Providence, Rhode Island • Coast-to-Coast Network of Branch Warehouses and Distributors

pipe and tube fittings • welding fittings • engineered pipe hangers and supports • Thermolier unit heaters • valves
Grinnell-Saunders diaphragm valves • pipe • prefabricated piping • plumbing and heating specialties • water works supplies
industrial supplies • Grinnell automatic fire protection systems • Amco air conditioning systems

FOOD ENGINEERING
FOR MANAGEMENT

A McGRAW-HILL PUBLICATION

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Accent Flavor-Gram

CAPSULED NEWS FROM THE WORLD OF FLAVOR

✓ CATERERS "CATER" TO FLAVOR RESEARCH. Such research* sold thriving Duchess Party Foods, Inc., of Oakland, California, on the "flavor retention" qualities of monosodium glutamate. They first used it in their sandwich mixes—now use it in poultry, casseroles, cole slaw and many frozen foods, too. Duchess does flavor research both "on its own," and in conjunction with the research departments of its large suppliers.
*Institutional Feeding and Housing, April '57

✓ FLAVOR STAYS "NEW" IN FROZEN BEEF STEW! After a year of storage, frozen beef stew still keeps its good flavor—when the proper amount of monosodium glutamate has been added. Flavor authorities* report that not only is initial flavor enhanced—but this flavor improvement is still apparent 12 months later.
*Tressler & Evers, Vol. II

✓ A LOOK INTO THE FUTURE. The Nov. '57 issue of Institutions Magazine reviews the startling changes in quantity cookery in the last 20 years—predicts some of the changes the future may bring. Example: more foods preserved with antibiotics or through use of atomic energy. The magazine also cites manufacturers who make food products indispensable to today's quantity menu planner—among them, Ac'cent•International, makers of pure monosodium glutamate.

✓ EAST MEETS WEST IN TAKE-OUT FOOD. The Chinafood Kitchen, Salt Lake City, enjoys a big business in home-delivered food . . . both American and Chinese style. This restaurant uses monosodium glutamate in its Chinese dishes as well as in its American specialties—including a popular fried chicken dinner, so speedily delivered that customers dubbed it "Quickee Chickee!"

✓ GLUTAMATE CAN KEEP VEGETABLES "YOUNG." During storage, shipping and processing, the natural glutamate content of many vegetables progressively fades. But Ac'cent, pure monosodium glutamate, builds up the glutamate content and even intensifies the natural flavor—without adding a flavor of its own. Because Ac'cent enhances and retains flavors in most meats, poultry, fish and soups, as well as vegetables, it is used today in more than 8,000 processed and prepared food items.

✓ FLAVOR IS THE MAIN BUSINESS OF AC'CENT•INTERNATIONAL. These monthly reports on new developments and happenings in the Food Processing Industry are just one of the many services we offer you. As the American pioneer of monosodium glutamate and flavor development, let our experience, our research and technical facilities and qualified personnel help you solve your flavor problems. If you would like to know more about the news items reported here, just drop a line on your letterhead to Technical Service Dept., Ac'cent•International, 20 N. Wacker Drive, Chicago 6, Ill.

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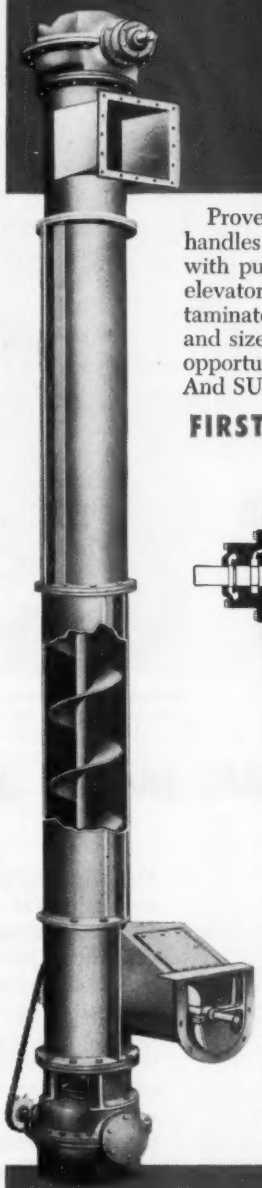
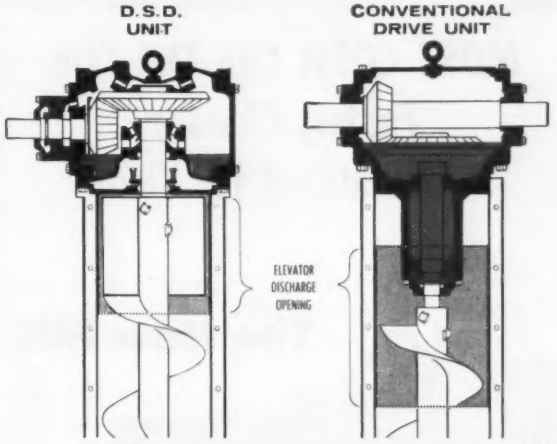
NOW... FOR HANDLING BULK FOODS
the NEW FORT WORTH
SUPER-LIFT
SCREW ELEVATOR
with D.S.D.* *Dry Shaft Drive Patent Pending



Proved in three years' development, SUPER-LIFT handles most free-flowing and many sluggish bulk foods with purity protected. SUPER-LIFT has the first screw elevator drive head from which oil *will not leak* and contaminate foods. SUPER-LIFT is offered in several types and sizes, with top or bottom drive. SUPER-LIFT offers opportunity for automating food handling/processing. And SUPER-LIFT brings you DSD – Dry Shaft Drive –

FIRST DRIVE HEAD THAT WON'T LEAK OIL



DSD has triple protection against oil leakage. **(1)** Oil level (shown red in cross section above) is below top of bearing housing, so there's no oil pressure on shaft. (2) Only a positive metered amount of oil is fed to bearing. (3) A shaft umbrella diverts oil from bearing directly to the reservoir, preventing possibility of leakage down the vertical shaft. As two drawings show, DSD is entirely outside the elevator casing while conventional drive unit extends a *hidden* reservoir of oil into the casing, generating pressure against the shaft seal. There are DSD units for both top (as pictured) and bottom drive. Safeguarding purity of materials, SUPER-LIFT is used to handle foods for human consumption.

OIL-TIGHT • DUST-TIGHT • ECONOMICAL • COMPACT

Send more data on ☐ **SUPER-LIFT**
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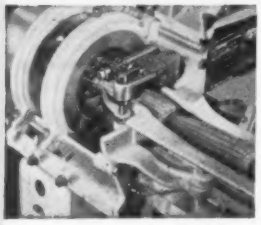
MORE CORN OFF THE COB
Faster, Cleaner
—Unmatched for Yield

Morgan Packing Company, Inc., with 48 FMC Model 3-A Cutters in three plants, shows impressive production gains on cream style corn.

The New FMC Model 3-A Corn Cutter

- ✓ Up to 7% more yield per ear!
- ✓ Up to 20% more output per cutter!
- ✓ No grading—handles mixed ear sizes!
- ✓ Less maintenance—21% fewer parts!
- ✓ Up to 50% more cutting between honings!



Automatic pre-opening of knives assures proper cut, deep or shallow, according to ear size. Gauging fingers and knife settings are adjusted instantly while cutter is in operation.

Many leading plants put thousands of production hours on hundreds of new Model 3-A Corn Cutters last season. Conservative customer estimates of increase in yield range up to 7%—depending on make and model of corn cutters replaced. In case after case, yield and quality are reported as greatly improved—even where operations average 120 or more ears per minute! Featuring A.S.D. —"Automatic Size Detection," the all-new Model 3-A utilizes a system of pre-opening knives which cut mixed ear sizes to any desired depth—without size grading or constant machine adjustment. Get the full story from your FMC representative, or write for descriptive bulletin No. 601-E today. You'll want information on the FMC easy-to-use Knife Honer, too.

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL CORPORATION

Canning Machinery Division

General Sales Offices:

WESTERN: SAN JOSE, CALIF. • EASTERN: HOOPESTON, ILL.

TRENDS & FORECASTS

SPECIAL

FOOD ENGINEERING

SERVICE to EXECUTIVES

In first quarter, net income of 46 food and beverage manufacturers was only 1% below similar period of '57, First National City Bank reports.

Retail food store sales in March were 9% higher than a year ago. Business of eating and drinking places was off 1%.

Convenience items and higher priced quality foods were still doing well in sales as of mid-May, three large retail chains reported to FE.

Production of frozen fruits and berries declined 3.3% in '57. Frozen vegetables were off 1.2%. Retail pack of fruits was down 17%; for vegetables the drop was 14.3%.

Prepared frozen foods are selling 10 to 20% better than last year, Eastern Frosted Foods Assn. reports. Entrees, desserts, meals are included.

Poultry used in canning and other processed foods increased 25% in first quarter of '58, compared to same period of '57, reaching 63,427,000 lb.

Amount of white potatoes canned increased 12% last year, to 3,745,705 actual cases. Mustard greens gained 8.2% to 633,091 cases, NCA reports.

Canned blueberry production increased 57% last year, to 730,112 actual cases. And output of canned boysenberries rose 49.5% to 334,712 cases, NCA reports.

Volume of candy retailing at $1 or more a pound increased 11% in first quarter, compared to same period of '57. That selling at 50¢ to 99¢, dropped 17%. Over-all, off 3%. But definite upgrading in quality.

Exports of farm products may reach $4.25 billion by '65, says Secretary Benson. But they will be down 10 to 15% this year.

Exports of canned vegetables, fruits, and fruit juices gained 6% last year to reach value of $111.7 million. Canned meat exports nearly doubled to $17.9 million. Canned fish dropped slightly to $12 million.

Food Business Excellent

Business in the food industry so far this year is even better than projected at the end of 1957, GMA's President, Paul Willis, reported on May 20.

Total food consumption expenditures were expected to rise to about $79 billion in '58, up from $75 billion last year. On the basis of current reports, augmented by discussions with executives in all parts of the country, it appears that the industry is running ahead of that prediction.

Retail food store sales for the first four months of 1958 were 9% ahead of the previous year. The inventory situation is favorable. Manufacturers and distributors are confident and optimistic.

It is very significant that there seems to be no downgrading of food purchases.

There has been no apparent change in planned capital investment. Most food plant expansion programs are proceeding on or ahead of schedule.

Future Outlook Good

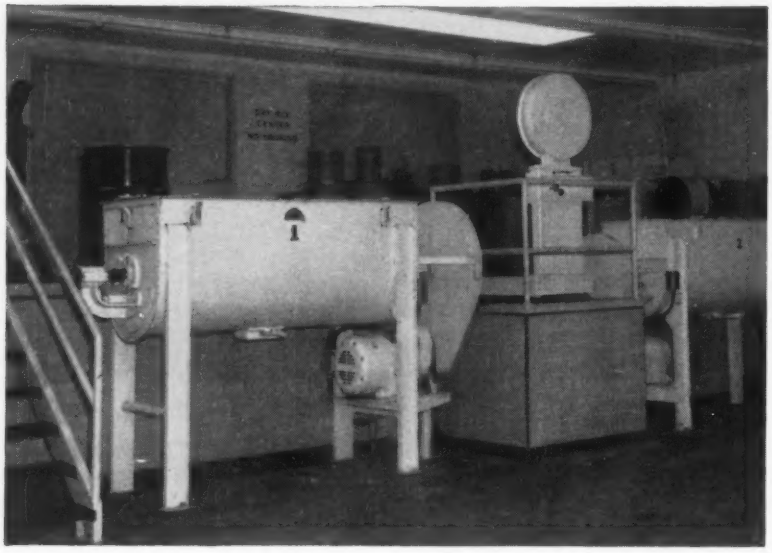
Domestic demand for food is expected to continue fairly strong during the remainder of this year, USDA reports.

Retail food prices during early summer likely will average somewhat higher than a year earlier,

See Developments to Watch p. 13

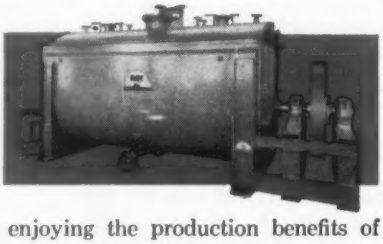
DAY mixes
in the best companies

Fearn Foods Inc. is one of thousands of old friends. They've used DAY Ribbon Blenders for years in their Franklin Park, Illinois, plant.



When the decision on what make of blenders to buy for their new modern Los Angeles plant came up, they just ordered three more DAY blenders. The reason — simply that DAY blenders have always given dependable trouble-free service. They operate smoothly, rapidly and efficiently. Their many features include outboard bearings that provide sturdy support for a solid alloy steel shaft. Stuffing boxes of sanitary seals for protecting bearings, prevent product contamination. They have a geared head motor, roller chain drive, galvanized or stainless tank, choice of agitators. Heating or cooling jackets optional. There is a complete line of DAY ribbon blenders available in capacities of 10 to 465 gal.

On the right is a DAY mixer from the Jumbo line. These rugged brutes are built for extra heavy loads. Capacities 600 to 3850 gal. Complete lab facilities available for testing your product.



Join the many companies now enjoying the production benefits of DAY blenders and mixers. Write today for Bulletin 800.

The **J. H. DAY** *Co.*

Division of The Cleveland Automatic Machine Co.

SERVING THE PROCESS INDUSTRY SINCE 1887

4924 Beech Street, Cincinnati 12, Ohio

Trends & Forecasts

though the difference probably will be less than during the first quarter of 1958.

Outlook is for continuing large supplies of food this summer, though somewhat smaller than those of a year earlier. Total meat supplies are likely to be moderately under last year's high level. More chicken meat will be available, but fewer eggs and turkey. The supply of dairy products will be only a little larger.

Processed fruits and vegetables will be a little less than the heavy supplies of a year earlier.

Supplies of fresh fruits and vegetables will increase seasonally as summer approaches. Indications are for a very large crop of peaches from the southeastern states this year. Fresh citrus and frozen concentrated orange juice will remain in shorter supply through the summer because of winter freezes.

Supplies of food grains and fats and oils continue more than adequate to meet domestic needs.

HORS D'OEUVRES

▶ **Without benefit of research, executives are right in 58% of important marketing decisions—8% smarter than a one-headed coin.**

▶ **Russia ahead of us? More than a third of her people are in agriculture, against less than a tenth for the U. S. Yet she produces only 71 lb. of meat per person compared to 226 lb. here; 49 lb. of sugar to our 100 lb.; and 0.6 ton of grain against our 1.1 tons. Russia's pie is in the sky.**

▶ By court ruling, an employer is responsible for workers during a coffee break. Seems breaks are an integral part of the working day—probably the most active part.

▶ **Latin American countries are suffering from a surplus in coffee. So drink an extra cup a day—to the health of our Vice-President.**

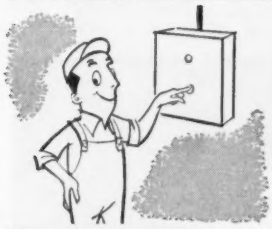
▶ Beer is said to have a mellifluous effect without muddying the drinker's clear-headedness. You stay sober but become a softie.

▶ **Yugoslavia will build a 60-store supermarket chain. Tito is shooting at space in the stomach.**

For more data, circle 220 on Reader Service Card

Using Salt Efficiently

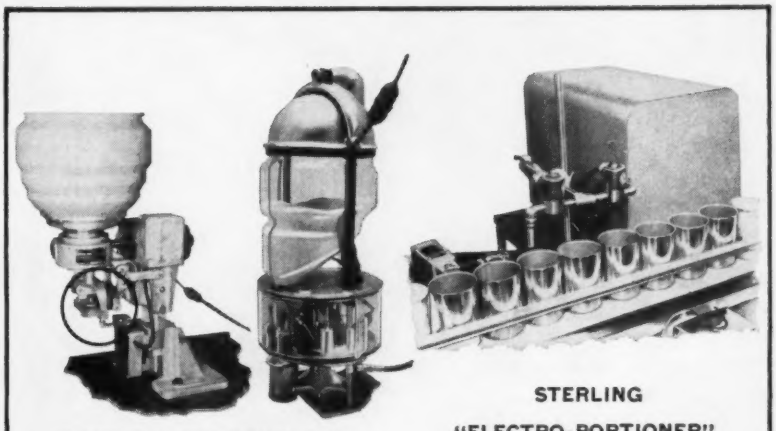
by INTERNATIONAL SALT COMPANY, INC.



Dispensing Sterling Purified Salt in Brine, Tablets, Bulk—Automatically

No matter how you add salt to your product . . . International Salt Company has the dispensing equipment you need. For adding salt in brine form, International has helped develop the Sterling "Electro-Portioner" Brine Dispenser. For depositing salt tablets, the Sterling Saltomat is available. And for dispensing Sterling Purified Salt in bulk, we supply the Sterling Bulk Salt Dispenser.

All these dispensers are fully automatic, highly accurate, economical to use, and thoroughly dependable. Even more important, they can operate on today's faster-moving lines. For all these reasons, International Salt Company is now supplying salt dispensers to a growing number of canning plants.



STERLING SALTOMAT (Left) AND BULK SALT DISPENSER

STERLING "ELECTRO-PORTIONER" BRINE DISPENSER

Sterling "Electro-Portioner" Brine Dispenser. Here's a new brine dispenser that's already in use in many canneries. A main reason is its versatility: it can dispense brine, sugar, MSG, or any combination of liquids into paper, glass, and metal containers.

In addition, the Sterling "Electro-Portioner" can dispense liquids into as many as 300 cans per minute. It always dispenses the right amount, has the "no can . . . no fill" feature that prevents brine waste. And it dispenses a preset amount of liquid whenever a container trips the sensitive microswitch.

Here's what Manager John A. Mayer, Durand Canning Co., Durand, Wis., says about the Sterling "Electro-Portioner" Brine Dispenser: "Two 'Electro-Portioners' on our #303 pea-canning lines, running at about 200 cans per minute, produced a considerable saving on both salt and sugar!"

Sterling Saltomat . . . for food packers who prefer to use Sterling Purified Salt in tablet form. The Saltomat is consistently accurate even when depositing tablets at the rate of 275 cans per minute. It is equally efficient in handling tablets from 10- to 250-grain size.

Sterling Bulk Salt Dispenser. This automatic unit has been developed especially to dispense bulk Sterling Purified Salt. Dispensing salt only when a container is in the correct position, the bulk dispenser wastes no salt . . . and gives positive accuracy.

Sterling Salt Dissolvers. To make fully saturated brine automatically from Sterling Rock Salt, International Salt Company supplies the Sterling Lixator in many designs and sizes. Operating on the self-filtration principle, this unit produces crystal-clear, fully saturated brine that can be used for virtually every canning job using brine.

For canning processes that require brine made from Sterling Purified Salt, International supplies the Sterling Evaporated Salt Dissolver. Both this dissolver and the Sterling Lixator are available in steel, Monel metal, and corrosion-proof plastic.

If you'd like more information on any of this salt-dispensing and brine-making equipment, phone or write International Salt Company, Inc., Scranton 2, Pa. . . . or contact our nearest district office.

Using salt efficiently in its many industrial applications calls for technical knowledge and experience. International Salt Company has both, plus a continuing program of research and development in salt. These things can be put to work for you, in your plant, to help you get the most from the salt or brine you use.

INTERNATIONAL SALT CO., SCRANTON, PA.

Sales Offices: Atlanta, Ga.; Chicago, Ill.; New Orleans, La.; Baltimore, Md.; Boston, Mass.; Detroit, Mich.; St. Louis, Mo.; Newark, N. J.; Buffalo, N. Y.; New York, N. Y.; Cincinnati, O.; Cleveland, O.; Philadelphia, Pa.; Pittsburgh, Pa.; Memphis, Tenn.; and Richmond, Va.

IN ANY FORM . . .

Sterling Purified Salt Always Protects Flavor, Color, Texture

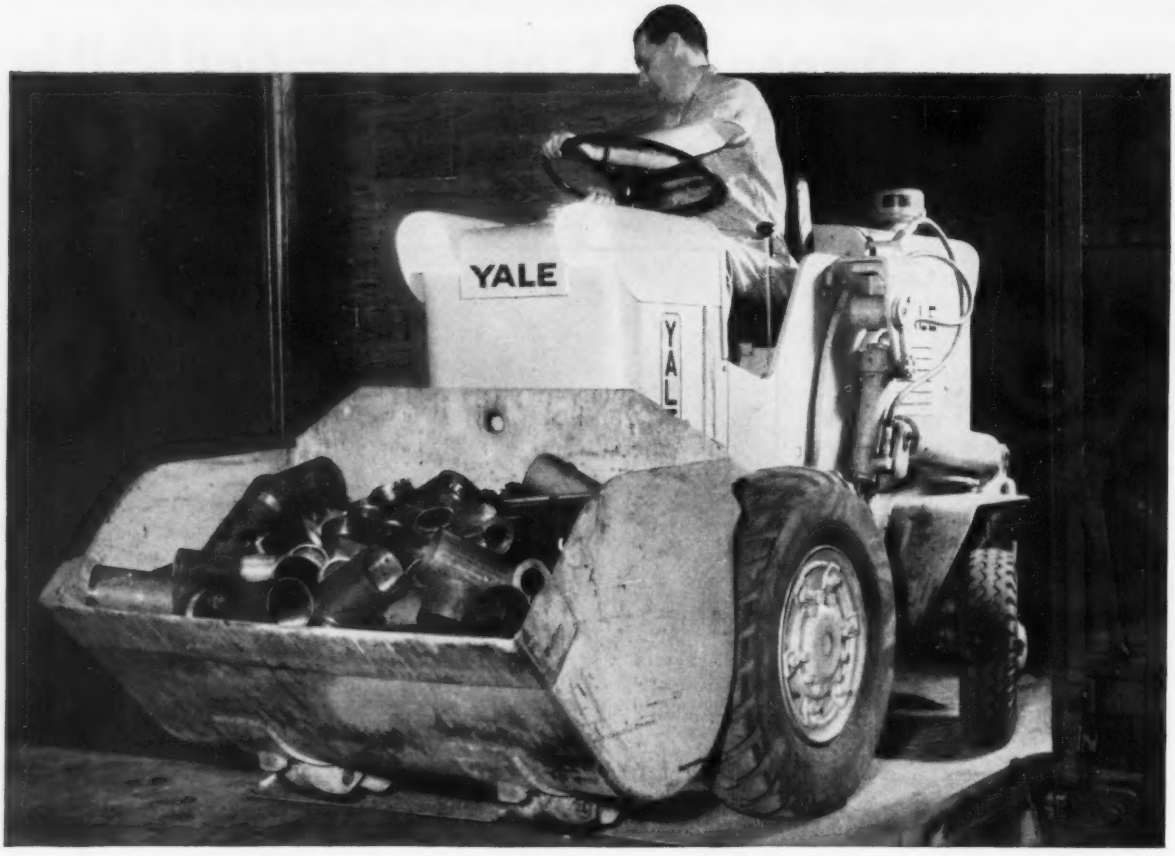
It's guaranteed to contain more than 99.95% sodium chloride! Whether you use Sterling Purified Salt in bulk, tablets, or brine—it never contains more than 40 parts per million combined calcium and magnesium, never more than 5 parts per million copper or iron. Downgrading of food, caused by excessive calcium or magnesium content in salt, is *eliminated.* Sterling Purified Salt meets the strict requirements for the entire canning and food-processing industry.

Service and research are the extras in **STERLING SALT**

PRODUCT OF INTERNATIONAL SALT COMPANY, INC

For more data, circle 221 on Reader Service Card

NEW YALE INDUSTRIAL TRACTOR SHOVEL



Carries more tonnage every hour

—field tests prove it!

Actual field tests prove the amazing work-capacity of the new Yale Industrial Tractor Shovel. Extra tonnage—extra work—extra duty cycles! Operating acceleration speed is 8 mph in 3.5 seconds. And Yale's exclusive fully automatic Torque Transmission produces quicker, smoother starting, more power under load conditions.

Loader-linkage advantages are unique. Exclusive 45° ground-level tipback provides top loading action, minimum spillage in grade-level position. Exclusive 6′ dumping clearance (highest on any model of similar wheelbase) automatically returns bucket from full dump position to dig position.

Let your operator work with it. He'll like the roomy, clear cockpit—the finger-tip controls—the ease of handling—the fact that there are no gears to shift. He'll especially like Yale's exclusive Safety-Curve Arms—that never rise above the side frame to cause injury. For a demonstration in your plant or further data write The Yale & Towne Manufacturing Co., Philadelphia, Pa., Dept. A466.

COMPARE THESE YALE FEATURES:

- Exclusive Yale Torque Transmission (fully automatic)
- Exclusive 45° ground-level bucket tipback
- Exclusive 6′ dumping clearance
- Exclusive Safety-Curve Arms
- Exclusive acceleration speed to 8 mph. in 3.5 sec.
- Exclusive sealed brakes
- Exclusive forward and rear operating lights
- 2500 lbs. carrying capacity
- Short wheelbase for minimum turning radius
- Gasoline or LP-Gas powered

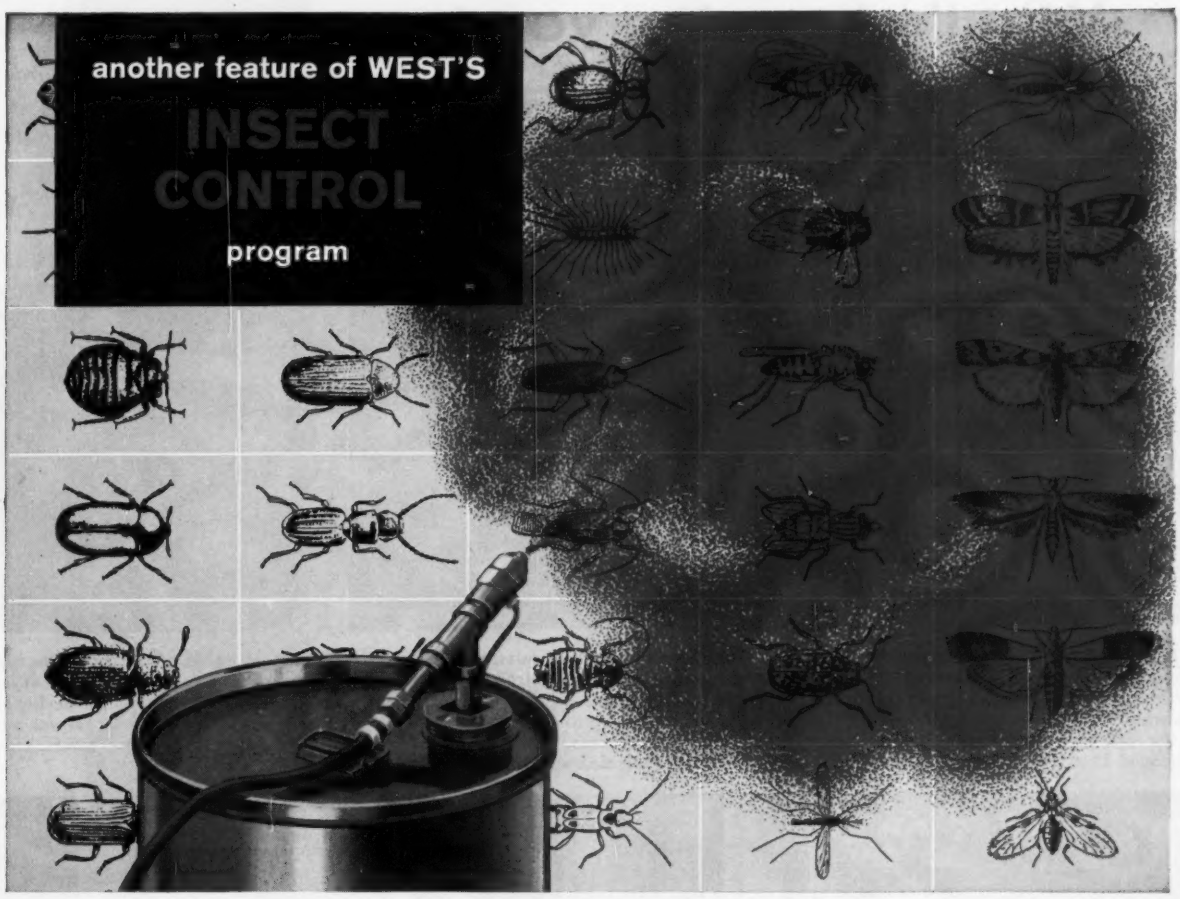
YALE* *REG. U. S. PAT. OFF.

INDUSTRIAL LIFT TRUCKS & TRACTOR SHOVELS • HOISTS

YALE & TOWNE

GASOLINE, ELECTRIC, DIESEL & LP-GAS INDUSTRIAL LIFT TRUCKS • WORKSAVERS
WAREHOUSERS • HAND TRUCKS • INDUSTRIAL TRACTOR SHOVELS • HAND AND ELECTRIC HOISTS

YALE MATERIALS HANDLING DIVISION. THE YALE & TOWNE MANUFACTURING CO. MANUFACTURING PLANTS: PHILADELPHIA, PA.; SAN LEANDRO, CALIF.; FORREST CITY, ARK.



SIMPLIFIED DRY FOGGING at lowest cost

You need only the drum fogging unit sketched above and compressed air to dry fog 100,000 cu. ft. of space with insecticide. The unit has been specially designed for high potency West Insecticides and is loaned without charge to purchasers. It fits any container from five to thirty gallons.

This is an example of how simple insect control can be with a scientific West Program. No special labor force is required. One man easily maintains the program in addition to other duties.

The West Insect Control Program offers a complete selection of equipment and insecticides:

Equipment includes everything from permanent installations to portables. All fogging units have exclusive suction spray nozzles that produce a dry fog of droplets within the optimum range of size for maximum kill and coverage.

Insecticides range from the highly economical Vaposector for space and contact spraying to residual sprays, other specialized contact sprays and fumigants. Quality and effectiveness are insured by chemical controls and insecticide testing in West's Entomological Laboratory.

A West Specialist will be glad to make a survey and suggest an Insect Control Program tailored to fit your needs. No obligation. Just mail the coupon.

Programs and Specialties for
Protective Sanitation and Preventive Maintenance

WEST CHEMICAL PRODUCTS INC.

WEST DISINFECTING DIVISION

WEST CHEMICAL PRODUCTS INC., 42-16 West Street, Long Island City 1, N. Y.
Branches in principal cities • In Canada: 5621-23 Casgrain Ave., Montreal

☐ Please send your 32-page booklet, "Industrial Insect Control."

☐ Please have a West Representative telephone for an appointment.

Name_____

Position_____

Mail this coupon with your letterhead to Dept. 18

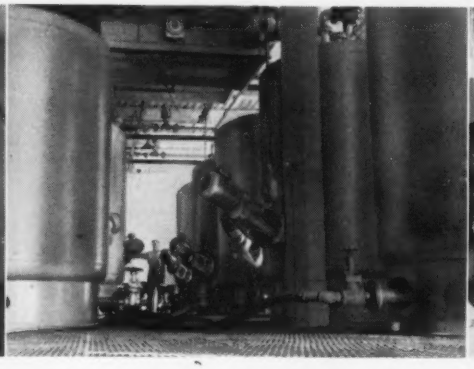
For more data, circle 223 on Reader Service Card

For more data, circle 224 on Reader Service Card →

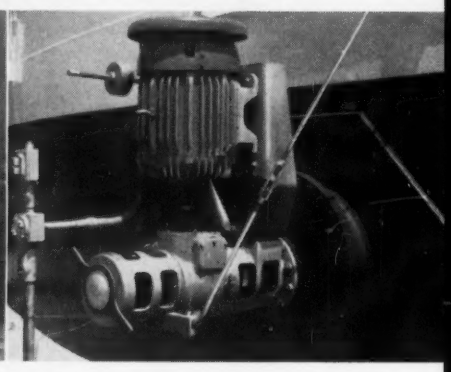
What's keeping you from getting TOP MIXING RESULTS?

Many things determine how well you mix fluids.
Here's a quick review of main points to watch.

1. Mixing pattern? Be sure it's fitted to your process. A vortex like this is good if you're wetting powders; not so good for other mixing jobs. To get competent suggestions on the *right* mixing pattern, call in your experienced LIGHTNIN Mixer representative.



2. Tank shape? For best possible mixing, experts recommend a "square" batch (tank height equal to diameter). But don't let that stop you from going to a special shape if it will help your process. You can get excellent mixing in *any* tank with LIGHTNINS.



3. Batch size? You can mix even the biggest batches to uniformity with LIGHTNINS. For example, this LIGHTNIN Side Entering Mixer produces full uniformity in several million gallons of oil in about two hours, utilizing only 25 horsepower.

4. Changing requirements? Build versatility into your mixing line—with LIGHTNIN Portable Mixers. You can always expand at low cost by adding a unit. Careful selection can also enable you to adapt the LIGHTNINS you buy now to other jobs later on.

5. Hard-to-handle materials? You can mix fluids up to many thousand centipoises viscosity with LIGHTNINS. Handle heavy suspended solids, pulps, fibers, fine powders. Special impellers give you wide choice of cutting, beating, whipping, other effects.

6. Impeller size and speed? These determine *flow* and *turbulence* in the batch. To get the just-right balance of both requires intimate knowledge of impeller characteristics. MIXCO has this knowledge—and uses it to give you optimum results.

You're sure about results when you mix with LIGHTNINS. Every LIGHTNIN Mixer is guaranteed, unconditionally, to do the job for which it is recommended. For prompt service on fluid mixing, just call your LIGHTNIN representative. Look him up in Thomas' Register or the yellow pages of your telephone directory. Or write us direct.

WHAT SIZE AND TYPE of mixer do you need? Check here for latest bulletins giving full description, packed with helpful facts on mixing:

- ☐ Turbine, paddle, propeller types; top or bottom entering: 1 to 500 HP (B-102)
- ☐ Propeller types; top entering: ¼ to 3 HP (B-103)
- ☐ Portable: ⅛ to 3 HP (B-108)
- ☐ Side entering: 1 to 25 HP (B-104)
- ☐ Laboratory and small-batch production types (B-112)
- ☐ Condensed catalog showing all types (B-109)
- ☐ Quick-change rotary mechanical seals for pressure and vacuum mixing (B-111)
- ☐ Data sheet for figuring mixer requirements (B-107)

Check, clip, and mail with your name, title, company address to:

MIXING EQUIPMENT Co., Inc., 143-f Mt. Read Blvd., Rochester 11, N.Y.

In Canada: Greey Mixing Equipment, Ltd., 100 Miranda Ave., Toronto 10, Ont.

Lightnin® Mixers

MIXCO fluid mixing specialists

DEVELOPMENTS TO WATCH

SPECIAL
FOOD
ENGINEERING
SERVICE to
EXECUTIVES

Radiant cooling protects flavor of bakery products by reducing loss of volatiles that occur with conventional evaporative cooling. It also curtails moisture loss, speeds cooling, and saves floor space.

Fats or meats are emulsified at 16,000 lb. per hr. with new comminuter. Tapered rotor of 140 cutting edges turns at 1,400 rpm. inside stationary sleeve with 16 rows of "teeth". Little heat is generated.

Cereals are electrically heat-treated while moving over vibrating conveyors to packaging operation. They are filled at 150 deg. F. to also heat carton in new Fisher Flouring Mills installation.

Continuous Baker process for making bread dough continues to gain. More than 2 million lb. of bread is made weekly with 19 units in 17 bakeries.

Principal cause of bread staling is starch crystallization. Staling can be retarded by adding heat-stable enzyme amylast to break up network of starch crystals or by use of colloidal materials to bind moisture.

Will tooth-decay preventive be added to foods in form of oat hull extract? Research at U. of Wisconsin indicates powerful protective effect against dental caries by oat-hull constituents.

Turkey ranks lowest among meats in cholesterol content, Cornell reveals. Content is 8 to 15 mg. per gm. for breast meat, 16-26 mg. for legs, 45-50 mg. for whole carcass. By comparison round steak has 125 mg.

Use of ultrasonic energy to remove meat from chicken bones is in development stage. Employment of ultrasonic cleaners for surgical instruments is significant. Labor is saved, bacteria count reduced.

Efficient new process for making frankfurters is under development. It involves grinding, mixing, cooking, smoking and cooling continuously.

Possibility of making durable corrugated shipping cases from sugar cane bagasse has been demonstrated by USDA. New refinements in screen separation of cane fiber and pith overcame major obstacle in pulping bagasse.

Twenty individual frozen entrees will be marketed to food service field by a leading firm. Entrees will be in Mylar-polyethylene boilable pouches, 12 to a carton. By end of year, 66 will be so marketed.

Ketchup now is packed in ½-oz. transparent portion-control packet for institutional trade by Diamond Crystal Salt. Mustard is put in ¼-oz. packet. Trend to institutional products and packages is accelerating.

See Washington Report p. 23

Tomato juice is being packed in quart and half-pint paper milk containers for distribution via retail milk routes and in retail food stores.

Unique multi-pack for potato chips is announced by East Coast Foods Co. Cellophane-overwrapped window carton contains six small chip bags. Plan is to have supers sell new pack in beverage department.

Toppings in 16-oz. nitrogen-propellant aerosol cans have been introduced by Liquid Carbonic. Four flavors—chocolate, marshmallow, butterscotch, and fudge—will be sold by Parti-Day, exclusive agent.

SEE NEXT PAGE ➔

Developments to Watch

New Cereal Food Developed

Mango cereal flakes is new food brought out by Indian National Research Corp., New Delhi.

Made up of mango solids 49%, wheat flour 23%, and added sugar 28%, it reportedly contains carotene equivalent to about 3,500 I.U. of vitamin A per ounce.

Process mango pulp, partially neutralized and separately heated, is added to wheat (or corn) flour that has first been cooked to gelatinize starch and destroy enzymes. Cooking then continues to desired consistency, after which sugar is added. Mixture is then homogenized and drum-dried into flakes.

Sardines Returning to Calif.

Brighter days lie ahead for California's sardine canners—word having come that these fish are now coming back to coastal waters.

Their scarcity in commercial quantities has depressed operations for several years.

"Turn of the tide" is signaled by the recent increased spawning off the southern California coast. This presages a return of good runs within 24 months, says Dr. Albert Tester, U. S. Bureau of Commercial Fisheries.

Schedule of Events

June

16-28—Annual Management Course; College of Engineering, State U. of Iowa, Iowa City.

23-25—American Society of Refrigerating Engineers, annual convention; Hotel Leamington, Minneapolis.

27-29—American Society of Heating & Air-Conditioning Engineers, annual convention; Penn-Sheraton Hotel, Pittsburgh.

July

6-10—National Confectioners Assn. annual convention & exhibit; Sheraton-Palace Hotel, Civic Auditorium, San Francisco.

9-11—National Macaroni Mfrs. Assn., annual meeting; Hotel Del Coronado, Coronado, Calif.

17-19—American Dairy Science Assn., annual meeting; N. Carolina State College, Raleigh.

16-18—National Kraut Packers Assn., annual meeting; Catawba Cliffs Beach Club, Port Clinton, Ohio.

August

11-13—Western Packaging & Materials Handling Exposition, Civic Auditorium, San Francisco.

18-20—American Soybean Assn. and National Soybean Processors Assn., joint annual meeting; Hotel Fort Des Moines, Des Moines, Iowa.

New Invention Cuts Waste Disposal Costs By Two-Thirds in Food Processing Plants

Industry Cost Averages May Be Lowered Soon

If your plant is average, you're probably spending between .55 and .85 cents for every cubic yard of waste or trash moved to the disposal area . . . not including truck operation costs.

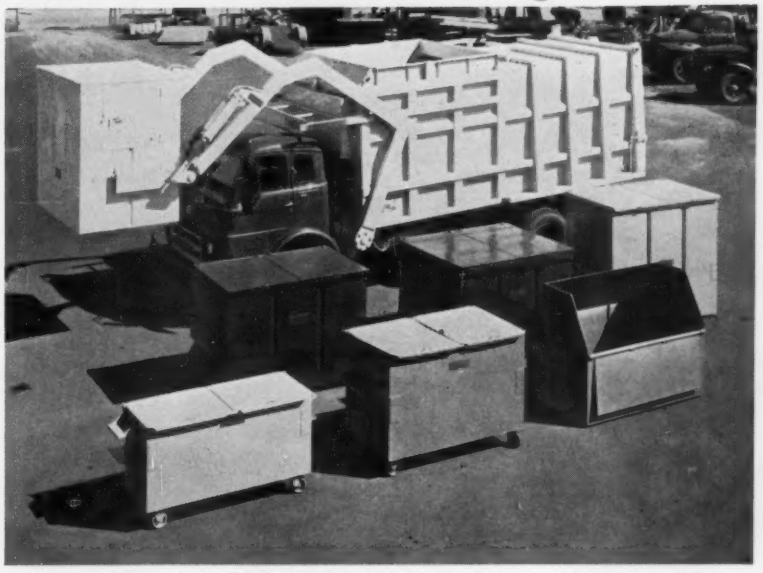
A recent development, the DEMPSTER-DUMPMASTER self-loading packer, promises to cut direct disposal costs to a new industry low of .07 to .16 cents per cubic yard for volume producers.

This new approach is an extension of the widely-established DEMPSTER-DUMPSTER System, in that it employs detachable waste storage containers. However, instead of carrying each container to the disposal area for dumping, the new machine empties many containers into its body, where the material is compacted to a fraction of its former volume. This permits per-trip payloads of 50 to 100 cubic yards of loose material, depending on its characteristics.

Multiple exposure photo shows dumping of 6 cu. yd. container.

How it Operates

The one-man Dumpmaster makes its rounds from container to container. Approaching, the driver engages lifting channels on the container's sides with the clearance arms. From controls in the cab, or remote controls at the front bumper, the container is lifted and rotated, discharging waste into the packer body. The material is hydraulically compacted while enroute to the next location. Containers may also be handled from docks or below grade. The safety clearance arms never pass the cab windows, eliminating possibility of driver injury.



The newly developed DEMPSTER-DUMPMASTER is shown with the seven basic containers it serves. Being hoisted is a 6 cu. yd. model. On ground are 1, 2, 3, 4 and 5 cu. yd. designs. Open container is used for hand-loading service.

New "Tracking" Caster Developments Make Plant "Container Trains" Practical

To whip the high cost of moving refuse outside, many plants are going to "container trains." Using special casters and couplers, eight to ten containers are towed by "plant mules" to inside generation points where an empty is dropped off and the full one is coupled on. Outside, the containers are uncoupled and automatically emptied by the waiting DUMPMASTER.

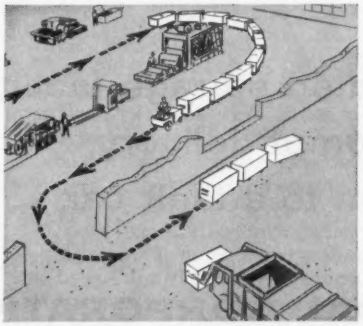


Diagram shows containers, in train, being hauled outside for emptying.

* * *

Many Designs Available

Standard and special-purpose containers, ranging from one through six cubic yard capacity, with or without casters, are available. The two cubic yard container above holds the equivalent of over 12 30-gallon trash cans.

Cost-Finding Book Offered

Write for the free 40-page book, "How to Cut Waste Disposal Costs," offered by the manufacturer. It contains cost-finding formulas, solutions to problems, case histories, industry average costs, etc. Equipment demonstrations arranged on request.

Mfd. by Dempster Brothers, Inc.

DEMPSTER BROTHERS

KNOXVILLE, TENN., DEPT. FE-6

Specify **glycerine** with confidence

Conveniently located storage facilities
assure prompt delivery,
from a drum to a tank car.

SHELL CHEMICAL CORPORATION
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For more data, circle 227 on Reader Service Card

B.F.Goodrich

Cannery cuts glove costs in half by switching to B.F.Goodrich brand

IN the 6-year period since standardizing 100 per cent on B.F.Goodrich rubber gloves, a California cannery reports that glove costs have been cut nearly one half. Reason is that these gloves stand hard use, last longer.

B.F.Goodrich canner's gloves are more than just strong—they are uniformly strong, even between the fingers where many gloves are weak. Use of a special rubber compound provides maximum resistance against the conditions encountered in food processing plants.

These gloves are ideal for use where finger dexterity is required. They are thin, light, soft and flexible. Palms and fingers have a molded-in crinkle finish, which gives sure, positive grip even when wet, slippery fruits and vegetables are being handled.

Workers like B.F.Goodrich canner's gloves because they are more comfortable in feel and fit. A special process makes them easy to put on and take off. They have curved fingers for added comfort and work ease; are made with an extra fullness at the back for free action. Long gauntlet can be worn straight or cuffed.

B.F.Goodrich Style 5293 canner's gloves are made in an attractive russet color, in sizes 7, 7½, 8, 8½, 9, and 10. They are sold by B.F.Goodrich distributors everywhere. Arrange to try these longer-lasting rubber gloves in your plant. See if they don't cut your glove costs. *B. F. Goodrich Industrial Products Co., Dept. M-355, Akron 18, Ohio.*

B.F.Goodrich *industrial products*

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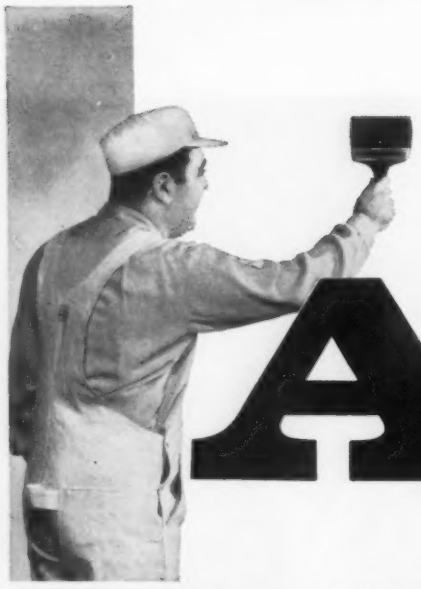

APR*

TRADE MARK

makes paint your partner in fighting GERMS, MOLD AND FUNGUS!

Yes, the dangerous disease-causing bacteria are held in check after contacting walls and ceilings painted with paints containing APR. This remarkable anti-microbial process reduces risk of cross infection from painted surfaces. In hospitals, food processing plants, dairies, bakeries, breweries, institutions, for business and industry . . . wherever people gather for work, study and play . . . the unique anti-microbial action of APR in paints is a valuable germ-fighting aid.

The anti-microbial effectiveness of the painted surfaces covers an extraordinary wide bacterial spectrum and lasts for the practical life of the paint film. Fungicidal paints with APR effectively control mold and fungal growth on painted surfaces.

APR IS SAFE—Surfaces coated with paints containing APR are safe and non-poisonous.

APR IS PERMANENT—The germ-proofing action of APR is residual throughout the paint film, even after washings and scrubbings.

APR SAVES YOU MONEY—Helps protect products and personnel. Cuts maintenance costs. Eliminates need for frequent disinfectant washings of walls and ceilings.

TOP QUALITY PAINTS . . . *PLUS* APR

- Easy to apply with brush or roller
- Dry in minutes
- Tough, scrubbable, durable
- No painty odor
- Wide range of decorator colors, plus white; dry to a velvet finish
- Excellent hiding power

PAINTS WITH APR COST NO MORE THAN OTHER FINE PAINTS!

QUALITY CONTROLLED YORK RESEARCH CORPORATION

The anti-microbial, bactericidal, germ proofing and fungicidal properties of paints with APR have been tested and proved by public authorities, universities, hospitals, industries and independent laboratories the WORLD OVER.

PAINTS WITH APR WORK WITH YOU AND FOR YOU, FIGHTING GERMS ON ALL PAINTED SURFACES . . . TODAY . . . TOMORROW . . . MONTHS FROM NOW . . . YEARS FROM NOW!

These are the fine brands of paint with APR:

ACKRA WALL with APR	Irwin Paint Co., Inc., Berkeley, Cal.
DECOR-X with APR	Breinig Brothers, Inc., Hoboken, N. J.
DURASATIN with APR	Dixie Paint & Varnish Co., Inc., Brunswick, Ga.
FUNGI-CHEK with APR	Charles Bowman & Company, New York, N. Y.
RYLON-X with APR	West Paint & Varnish Co., Boston, Mass.
SATIN-X with APR	Jones-Blair Paint Co., Inc., Dallas, Texas
SUPER-ONE-ALL with APR	Olympic Paint & Varnish Co., Los Angeles, Cal.
WAL-SHIELD with APR	M. A. Bruder & Sons, Inc., Philadelphia, Pa.

Choose from two types of paint with APR—anti-bacterial and anti-fungal, to withstand conditions of condensation or humidity. Ask your supplier for the correct one to fill your requirements.

*Anti-microbial Process Reagent by Dentolite Formulae.

DENTON EDWARDS CO., LTD.

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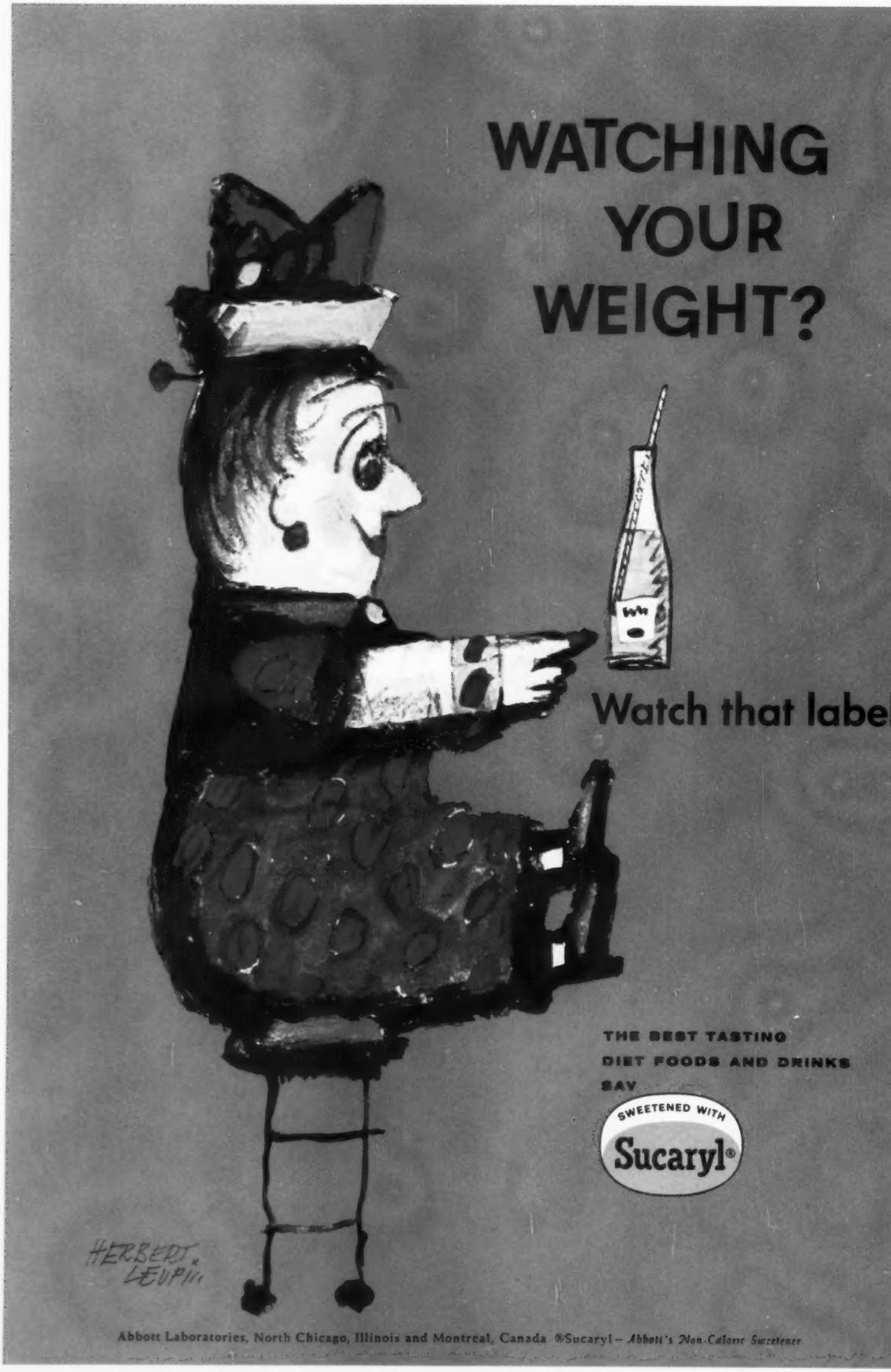
Have you seen your latest free advertising ?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SAY
SWEETENED WITH
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LEUPIN
Abbott Laboratories, North Chicago, Illinois and Montreal, Canada ®Sucaryl – Abbott's Non-Caloric Sweetener

! Here you are

Another Sucaryl® advertisement, in the

Saturday Evening Post (*June 21st*),

pre-selling your diet product

when the label says SWEETENED WITH Sucaryl®

If you haven't the little Sucaryl sign on your label by now, surely you can by fall. And there'll be plenty more ads in this sales-minded campaign, telling diet shoppers how to spot the best-tasting diet brands.

You understand that this campaign is something new and different. It doesn't just sell Sucaryl; it sells products sweetened with Sucaryl. There's another campaign that does sell Sucaryl, and does it very well. Sucaryl today has greater public acceptance than all other non-caloric sweeteners combined.

The new campaign simply aims to transfer Sucaryl's overwhelming popularity to *your* low-calorie brand. All you need do is use the little Sucaryl sign on your label, in your advertising, on your displays. Good way to make more money.

For complete information about Sucaryl, send for our booklet: "Making the Most of the Dietetic Market with Sucaryl." Address Chemical Sales Division, Abbott Laboratories, North Chicago, Illinois. On request, too, we'll send you a supply of Sucaryl for your own test purposes.

Please send booklet "MAKING THE MOST OF THE DIETETIC MARKET WITH SUCARYL"

NAME _____
(Please Print)

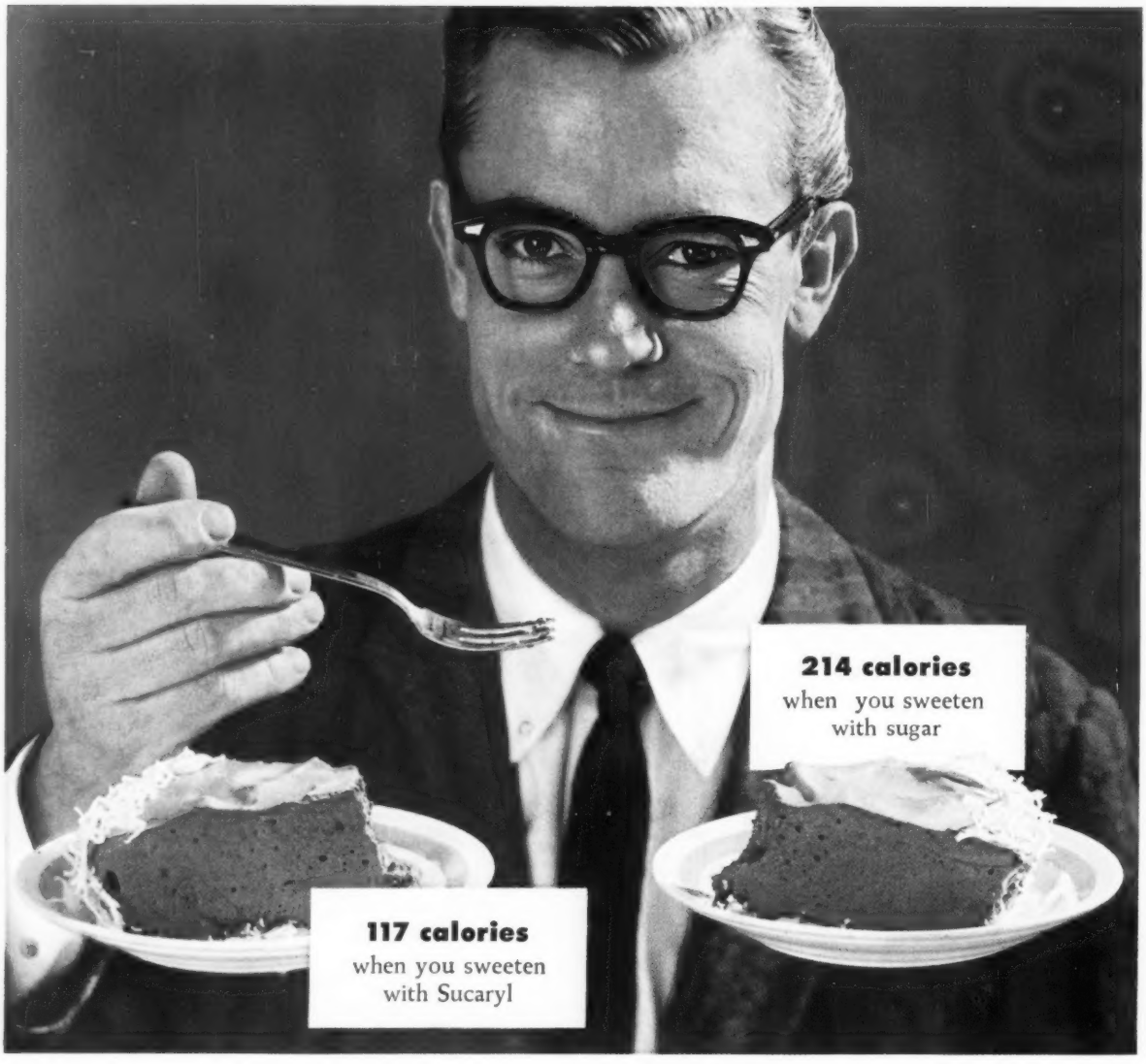
FIRM NAME _____

ADDRESS _____

CITY _____ STATE _____

YOUR TITLE _____

Here's Sucaryl's current "ad-of-the-month"



You can't taste the difference, but

Sucaryl makes it lots easier to cut down calories

WEIGHT WATCHER'S CHOCOLATE CHIFFON PIE

½ tsp. oil
½ c. shredded coconut
⅓ c. cold water
1 tbsp. gelatin
2 tbsp. Sucaryl solution
¼ tsp. salt
1 tsp. vanilla
1 square (1 oz.) unsweetened chocolate
¾ cup boiling water
2 egg yolks
½ c. nonfat dry milk solids
½ c. ice water
⅛ tsp. cream of tartar

Brush 8-inch pie plate with oil; coat sides and bottom with coconut. Set aside. To cold water, add gelatin, Sucaryl, salt, vanilla; set aside. Melt chocolate in double boiler; add boiling water; cook and stir until smooth; remove from heat. Add unbeaten egg yolks; stir until blended. Add gelatin mixture; stir until smooth. In chilled bowl, beat milk solids with ice water and cream of tartar on high speed until stiff peaks form. Add chocolate mixture slowly while beating on low speed. Pour into pie plate. Chill until set. Serves 6.

FREE—Our new cookbook, "Calorie-saving Recipes with Sucaryl," including dozens of new kitchen-tested ideas for desserts, beverages, sauces, dressings . . . 50 wonderful recipes in all! Get your free copy at your drug store.

Sucaryl simply says you don't have to trim portions to trim calories. No compromising your taste, either . . . any dish sweetened with calorie-free Sucaryl tastes just like its sugar-sweetened twin.

You use Sucaryl practically anywhere you would sugar. In tablet form, to sweeten your coffee, tea or any other hot drink. In solution, for fruits and cereals, for cold drinks, and for cooking and baking.

Sucaryl, of course, is for anyone sensibly counting calories, and for those who for any other reason can't use sugar. Low-salt diets call for Sucaryl Calcium. Abbott Laboratories, North Chicago, Illinois and Montreal, Canada. Abbott

New Table Bottle At Drug Stores Everywhere

Sucaryl®

Non-caloric Sweetener—No Bitter Aftertaste

Flemming Replacing Folsom at HEW

Named to take over as head of FDA's parent department, Health, Education & Welfare, is Arthur S. Flemming, 53, erstwhile director (1953-58) of the Office of Defense Mobilization and (since last year) president of Ohio Wesleyan U.

He will assume office as HEW chief and cabinet member late next month, succeeding Marion Folsom.

Flemming is described as a very personable government careerist of the "team player" type, a man seen capably carrying forward Administration policies.

Folsom, in his May 7 letter of resignation, said he was leaving for personal reasons, which he did not further specify. He had, however, favored vigorous action, rather than "status quo," on school construction, medical research, and expansion of FDA activities.

Reprieve on Chem-Treatment Labels

FDA is running into heavy opposition to its proposed revision of labeling rules for chemically treated fresh fruits and vegetables.

The changes were due to take effect last month. But the widespread objections have led the agency to prop the record open for filing of additional comment until Sept. 1.

The postponement came in the wake of Congressional hearings on a bill urged by Florida citrus growers and other produce suppliers. This bill–HR-9521, Rep. James Haley, (Dem., Fla.)–would revoke FDA's power to compel labeling informing consumers of the chemical preservatives (mostly fungicides) applied after harvest of fruits and vegetables.

FDA, however, would exempt as "impracticable," labeling of chemicals applied before harvest (FE May, p. 23). Meanwhile, it opposes the more sweeping Haley bill, which is not deemed to have much chance this year.

USDA and FTC may "divvy up" the jurisdiction over wholesale and retail trade practices of meat packers.

Exempt Trucking Still a Question

Should trucking of poultry, frozen fruits, and vegetables be returned to ICC regulation? Or should the 1935 Motor Carrier Act exemptions be continued?

In Congress, the issue remains moot–"something to be said on both sides." It's moot, too, with the National Assn. of Frozen Food Packers, which stands "neutral" in recognition of "divergent interests" of its members.

Poultry people likewise are divided. Cited is a USDA survey of 144 processors.

It shows rates for poultry trucking declined after the exemption, service was expedited, and there was greater availability of trucking equipment, with more willingness to serve out-of-the-way points and distant markets.

On the other hand, regulated truckers were credited for higher quality service, greater financial responsibility, more reliable pickup and delivery, and better equipment requiring less managerial attention by shippers.

Meanwhile, the "exempts" have upped their share of the business. For example, they hauled 52% of the interstate volume of fresh poultry in '56-57, compared with 38% in '52.

Two Agencies Over Meat Packers?

This would be the compromise resolving the long-argued question–if the new substitute measure for S-1356 (the O'Mahoney-Watkins bill) goes through.

The proposal calls for concurrent jurisdiction over packers by the two agencies for a period of three years. During this time, either agency (but not both) could file charges against operators considered "out of line."

Meanwhile, AMI opposes the new bill as "confusing the matter still further." It favors a simple amendment keeping meat packing jurisdiction under USDA.

Still Hope for Easier Amortizing

Congress had its hand full, as this was written, with "Will we, or won't we?" problems of tax legislation. And the time left to act was ebbing.

The passing weeks have seen chances of tax easements get dimmer. But at least some hope has been held for a measure which would allow quicker tax amortizations of plant and equipment.

Here, prime attention has been on Sen Capehart's bill calling for faster tax write-offs for 18-month period beginning Jan. 1, 1958.

BRIEFS

Zero tolerance is proposed by FDA for the pesticide, "Aramite," when applied to food crops. This would rescind the current 1 ppm. tolerance. But maker, Naugatuck Chemical Div., U. S. Rubber Co., wants a group of scientists to decide the matter. FDA points to quantity amounts of agent causing cancer in rats and dogs. However, Naugatuck contends it's harmless to humans in such amounts as 1 ppm.

Extension of the Trade Agreements Act became more likely with endorsement by the Administration of a compromise bill. This would permit over-riding of the President's tariff decisions by a two-thirds vote of Congress. Protectionist forces, however, have remained at their guns. Hence, late May found outcome of the issue still a question.

How they do it in Russia will be observed directly by USDA Secretary Benson–if his plans materialize for a 10-day U.S.S.R. visit this summer. His invitation is a return bid from Soviet Minister of Agriculture V. Matskevich, who came here in '55.

...glamour in glass!

adds impact to in-store display

The foods you sell can show off much better, in beautiful glass by H-A. In crystal flint jars, nappys, or colorfully designed re-use tumblers—H-A uses beauty to pep up the power of package display. That's why H-A packaged foods appeal quicker to the eyes that buy.

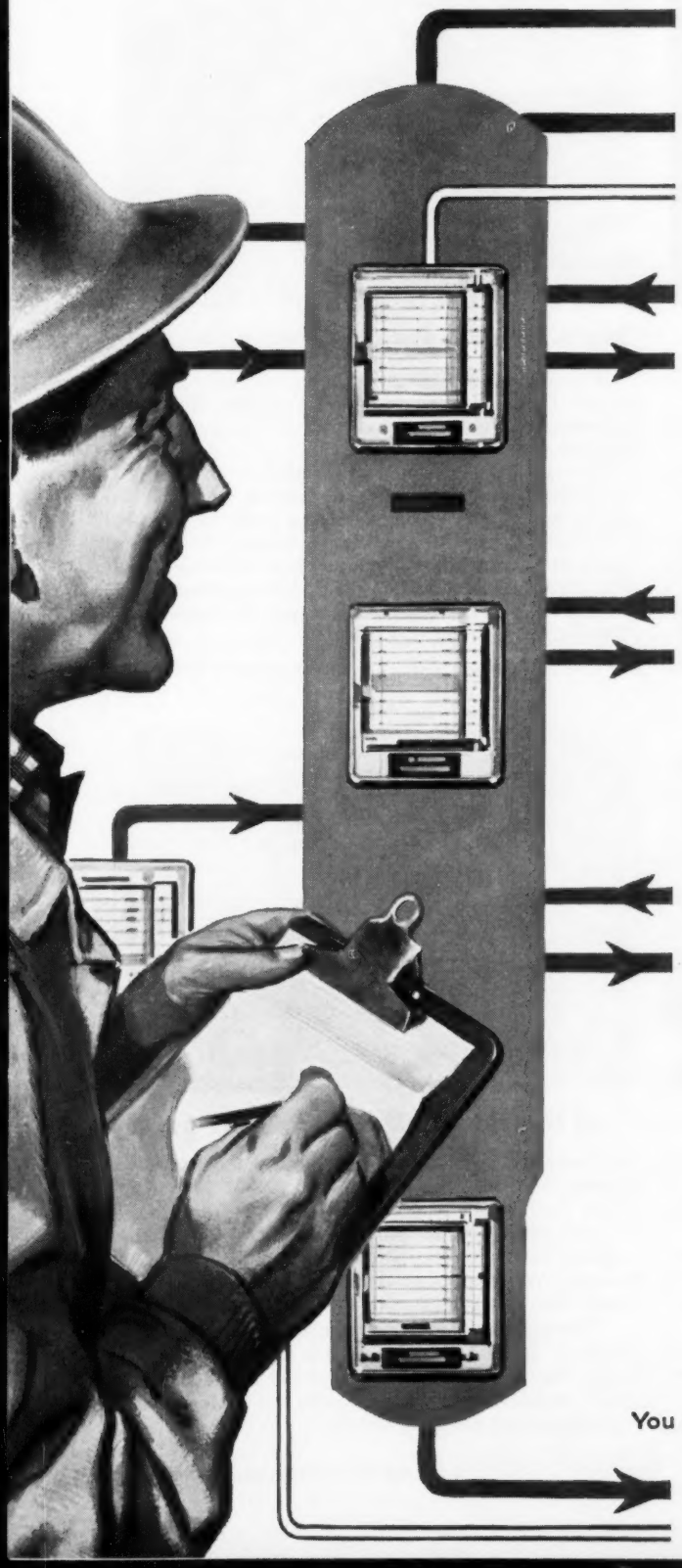
HAZEL-ATLAS GLASS division of CONTINENTAL CAN COMPANY

Wheeling, West Virginia

For more data, circle 232 on Reader Service Card→

Nothing gets by

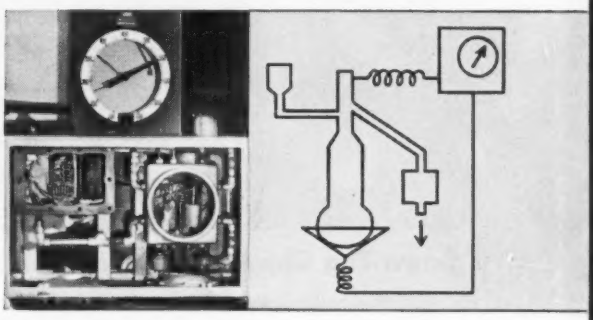
Automatic end-point testing device developed by Standard Oil research men makes certain of the uniform quality of gasoline and diesel fuel delivered to you.



Scientists at Standard Oil never stop in their drive to improve and then improve again the uniform quality of the petroleum products that bear the Standard Oil trade-mark. These engineering research scientists have now created wholly new instruments for performing near continuous physical analysis *automatically.*

One such instrument automatically performs the physical analysis that determines end-point. Using it, refineries maintain a continuous inspection of the temperature at which gasoline and diesel fuels are completely distilled. To you, this means that Standard is able to maintain a constant control over the uniformity and high quality of (1) the fuels you burn for heat or use to power your diesel engines and (2) the gasoline for your truck fleets. It also means that power- and heat-producing petroleum products, with their constantly controlled end-point, burn uniformly, give you uniform high performance.

This is part of the research pay-out, the "something more" research builds into the products you buy from Standard. This is your return from Standard's investment in research. And now there are 48 district offices in the 15 Midwest and Rocky Mountain states to serve you. Call the one nearest you. **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**



Automatic end-point tester works this way. A small sample is placed in an electrically heated flask. The temperature is measured and recorded during a heating cycle when distillation is accomplished. Distillate is condensed and drained, the flask temperature is lowered by introduction of the next sample, and the apparatus is ready for another test.

You expect more from STANDARD and get it!

NEW PACKAGES & PRODUCTS

New Film Makes Debut

Introduced at the National Packaging Exposition in New York was Conolex, a new extruded linear polyethylene film that offers several hot advantages to food packagers.

Moving into full commercial production this month, the film is a product of Continental Can Co.'s Shellmar-Betner Flexible Packaging Division.

Among advantages of the film are high surface gloss, stiffness, ease and straightness in tearing, low permeability for oils and acids, and the ability to withstand a wide range of temperatures (from freezing to boiling). Defect of the present film is its lack of impact strength.

Circle 1 on Reader Service Card

Multi-Pack for Potato Chips

Directed at expanding super market sales is East Coast Foods' new multi-pack for potato chips. An overwrapped and windowed carton holds six small bags of potato chips.

The package will appeal to families who don't use a whole big bag of chips at one time, and is ideal for lunch boxes and snacks. The Riverhead, N.Y. processor is planning to have the packages displayed in both the confectionery and beverage departments of the super markets, doubling consumer exposure.

The printed cellophane overwrap is supplied by Oneida Paper Products, Clifton, N. J.

Circle 2 on Reader Service Card

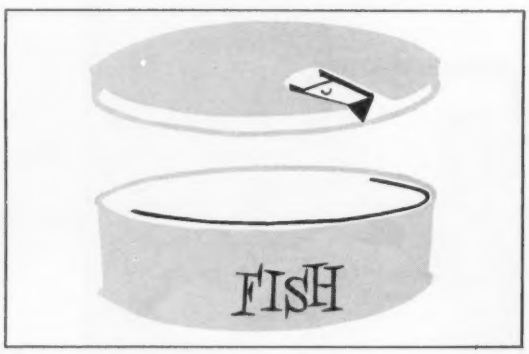
Screw-Top Cap for Baby Foods

Following through on surveys that indicates a consumer demand for screw-top caps for baby food jars, H. J. Heinz Co. has adopted a shallow aluminum closure for four of its products.

Assisted in the development of the closure by Aluminum Co. of America, Heinz reports that research proves that the cap "is a convenience mothers will appreciate."

The Heinz baby foods now using the new closure are strained bananas, custard pudding, fruit dessert, and apricots and oatmeal.

Circle 3 on Reader Service Card

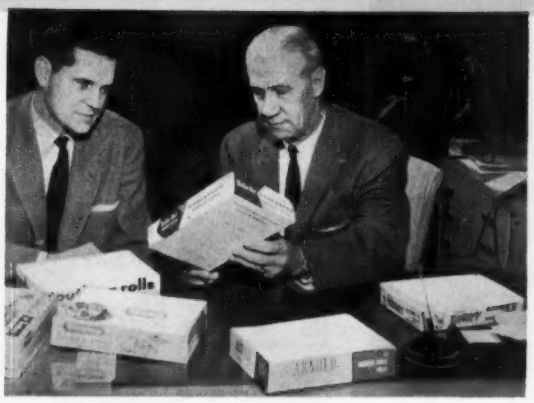


Can Has Built-In Opener

Two British companies—a tobacco supplier and a candy packer—are using a unique package to market their products.

The package consists of a lightweight can with an opener built into the lid. As seen in the sketch, the design may have value as a container for fish, meats, and other food products.

The opener is a sliding point set in the lid. The body of the can is sealed with a tin cover under the lid. The point of the opener is slid inside the bevel and pressed down to puncture the seal. A full rotation of the lid cuts the inner seal free.



Brown-and-Serve Cartons

Newest advance in packaging of brown and serve and finished bake goods requiring moisture-grease proof protection is Hi-Fi Polyglaze. Made by American Can Co.'s Marathon Division, the new bakery trays and cartons are reported to be enjoying immediate success.

Hi-Fi Polyglaze is designed to replace conventional laminated board trays as a standard for moisture-grease proof protection in the Marathon line of bakery packaging. The new polyethylene extruded coating on the packages has a high luster, smooth feel and appearance. It allows bakers to package *hot* and deliver a product that won't stick to the package, won't stain through.

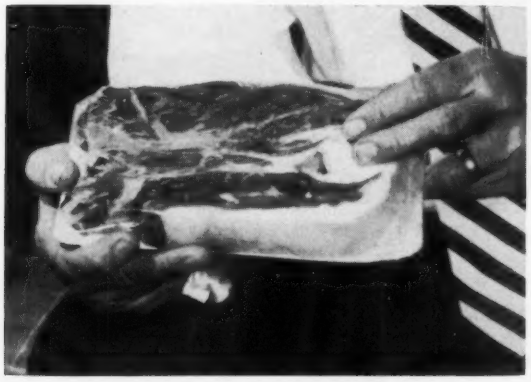
Circle 4 on Reader Service Card

Expand Portion Packet Line

An expanded line of portion control packets for the institutional market has been announced by Diamond Crystal Salt Co., St. Claire, Mich. The line now includes ketchup, mustard, cheese, apple and grape jelly, and three meal service kits.

The one-half ounce ketchup packet is U.S. fancy grades; the mustard packet weighs ¼-oz. and is salad grade; the peas packet contains 5 gm. of grated parmesan cheese, and the ½-oz. packets of jelly are pure—without any preservative added.

Three meal service kits, all cellophane wrapped, have been designed for restaurants, drive-ins, and locations where food must be carried out.



Wrap Designed for Red Meats

Reported as the first completely new wrap designed especially for self-service fresh red meats is American Viscose Corp.'s Visco 300 Reo. The wrap has a polymer resin coating on one side of a specially prepared cellulose base sheet.

The newer polymer resin film is reported to assure vertual elimination of rewraps, extra protection against rough handling, longer retention of meat bloom.

And, the wrap offers these advantages: Wrapping departments can obtain tighter wraps; Wrinkling is absent due to film's greater dimensional stability; Clarity is high.

Circle 5 on Reader Service Card

Introduce New Tea Blend

A series of tea parties recently introduced Standard Brands new blend of Tender Leaf tea. At the same time the blend was moving into complete national distribution.

According to Robert Bryant, Product Manager, "the new blend flavors and colors the tea in less time. In addition, the color is brighter, with more sparkle; and the brew is less likely to cloud when iced."

Package remains the same—seal-wrapped in red and white foil—but a zip-off strip has been added to make it easier to open. Package sizes include ¼- and ½-lb boxes of loose tea, and tea bag packages.

quality is more than skin deep...

with

VICTOR BELTING

Sure the "skin" is important... it's the surface that touches the food. But the life expectancy of the base belting itself is where quality really shows.

Realizing this, our research department conducts continuous, exacting tests on belt wear and life to make certain the components of Victor Belting are the best suited to give long service, to permit thorough removal of food residue, and to keep "belt-taste" from the food being handled. That's why—with complete confidence—we recommend for *your* food handling:

VICTOR SUPRENE . . . special-woven cotton duck belting thoroughly impregnated with a Neoprene compound. Waterproof, resistant to grease and most food chemicals, smooth-surfaced, and easily cleaned.

VICTOR 475 . . . highest quality, solid-woven cotton belting impregnated and coated with a Neoprene compound. Developed for use where cleanliness is a *must*. Washable with hot water or steam. Resists rancidity and deterioration.

For food handling the modern sanitary way select from—

A COMPLETE LINE Including:

- **Neoprene Belting • Balata Belting**
- **Solid-Woven Belting • Hycar Belting**
- **Canvas Stitched Belting**
- **Belting Specialties**

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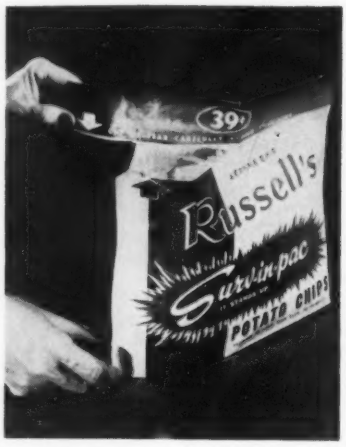
Eastern Factory

New Packages & Products



Packaging Briefs

• Glassine bag (above photo) designed to package potato chips has a deep gusset at the bottom of the bag which opens to form a broad base allowing the bag to stand upright by itself, acting as its own serving bowl. Manufacturer is Cupples-Hesse Corp., St. Louis.

Circle 7 on Reader Service Card

• New coated paperboard replacing laminated liners for glass container closures, is reported to be lower in price. Developed by Minnesota Mining & Manufacturing Co., the resin development is called CB 100.

Circle 6 on Reader Service Card

New Convenience Line

A new brand of convenience foods has been launched under the Fresh 'N Reddy label. Processor will specialize in non-frozen ready to heat-and-eat foods.

Testing of the company's first product, Fresh 'N Reddy pizza, has proved successful. Planned for the future are a chicken product and a whip topping.

Launch Seven Products

Pillsbury Mills has announced the simultaneous national launching of seven new grocery products.

Making their debut will be five cake mixes: cherry angel food, pineapple, applesauce loaf-size, chocolate pudding, and lemon pudding. Two frostings—creamy fudge and creamy vanilla—will also be introduced.

Cooked Turkey Roll

Made of both light and dark meat, fully cooked and boneless, is Armour & Company's new Armour Star Turkey Roll. The new item consists of an 8-10 lb. sandwich size roll of 60% white and 40% dark meat. The product is new, completely sealed in a moisture proof casing, and hard frozen to protect quality and flavor.

Tomato Juice in Cartons

American Can Company's quart and half pint flat top milk cartons are being used for tomato juice by Glacier Groves, Cincinnati, and Lake Alfred, Fla. The firm has previously used Canco cartons for its chilled orange juice.

The pure tomato juice is being merchandised in the mid-west by retail milk routes, grocery stores and super markets.

Circle 8 on Reader Service Card

New Product Shorts

Treats for Baby are Gerber's strained chicken noodle dinner and strained macaroni, tomato, beef and bacon. Both items have undergone successful marketing tests.

Dietetic frosting mix marketed under Duff's Spice Low Calory Cake and Frosting label makes a fully frosted two-layer cake. Box holds 16¼ oz.

High Protein Cereal marketed under Betty Crocker label is called Hi-Pro. Made of wheat, corn, and rice blended into a tasty flake, the product is reported to carry three times the high quality protein of conventional cereals.

Institutional white sauce mix or roux answers the need for simplfying and standardizing simple white sauce, the more elaborate sauces derived from it and all creamed foods. Marketed by Accent-International, the new mix is called Sauce-Quik.

Frozen Tuna Pies have been added to the popular line of Boxed Deluxe Foods, Chicago.

KEEBLER®
has a reason...

Just a few hours' exposure to moist air and all the snap goes out of the best saltine cracker. That's why Keebler® relies on a special Riegel waxed glassine to wrap their Sta-Fresh paquets . . . to provide a dependable moisture barrier at low cost per unit. Open one paquet for use, and the others in the box are safely kept oven-crisp. It's just one more proof that *protected by Riegel* means extra benefits:

Product protection always, plus flexible packaging materials that are

. . . tailored to run at high speeds on automatic machines

. . . made to your own specifications; printed, waxed, coated and laminated combinations of all types

. . . packaging materials that are made right, run right, and are priced right

Hundreds of today's best-sellers benefit from Riegel's uniformly effective system of product protection. You can too.

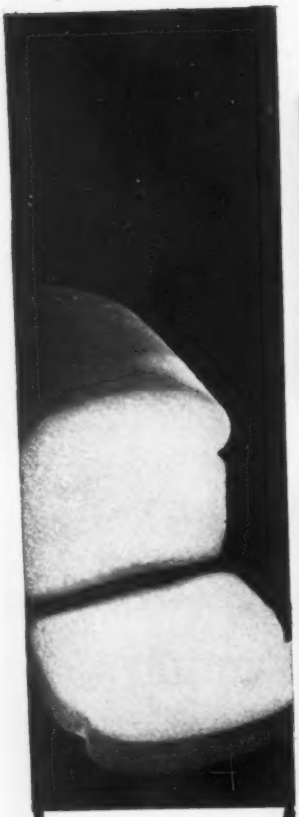
Write Riegel Paper Corporation, 260 Madison Avenue, New York 16.

Riegel

PROTECTIVE PACKAGING MATERIALS

Individually wrapped Sta-Fresh paquets of Keebler's Saltines are protected against moisture by Riegel's special light amber glassine, packaged at high speeds on a Battle Creek Cracker Wrapper.

For more data, circle 234 on Reader Service Card

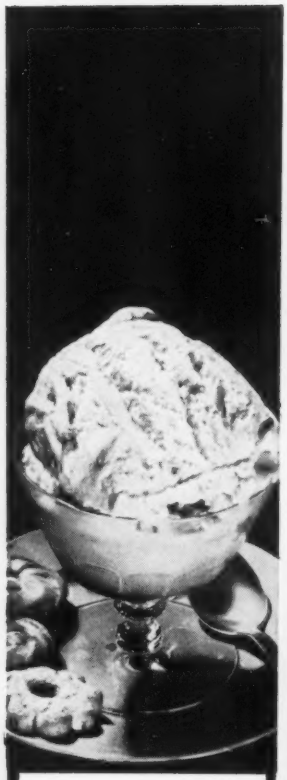


IN BREAD

Assures complete, controlled fermentation, enhances flavor and aroma, gives even texture, uniform grain, maximum retention of softness, longer shelf life.

IN CATSUP

Preserves piquant tomato flavor, enhances delicate spice flavors, protects the rich red color of all tomato products.



IN FROZEN DESSERTS

Assures firmer, finer-grained ice cream, with rich butterfat flavor—prevents surface crusting and preserves true fruit flavor in sherbets and water ices.

IN CANNED FRUITS

Enhances true fruit flavor, protects natural color, stabilizes the good eating qualities of fruits—adds appetite and sales appeal.

CERELOSE

BRAND DEXTROSE

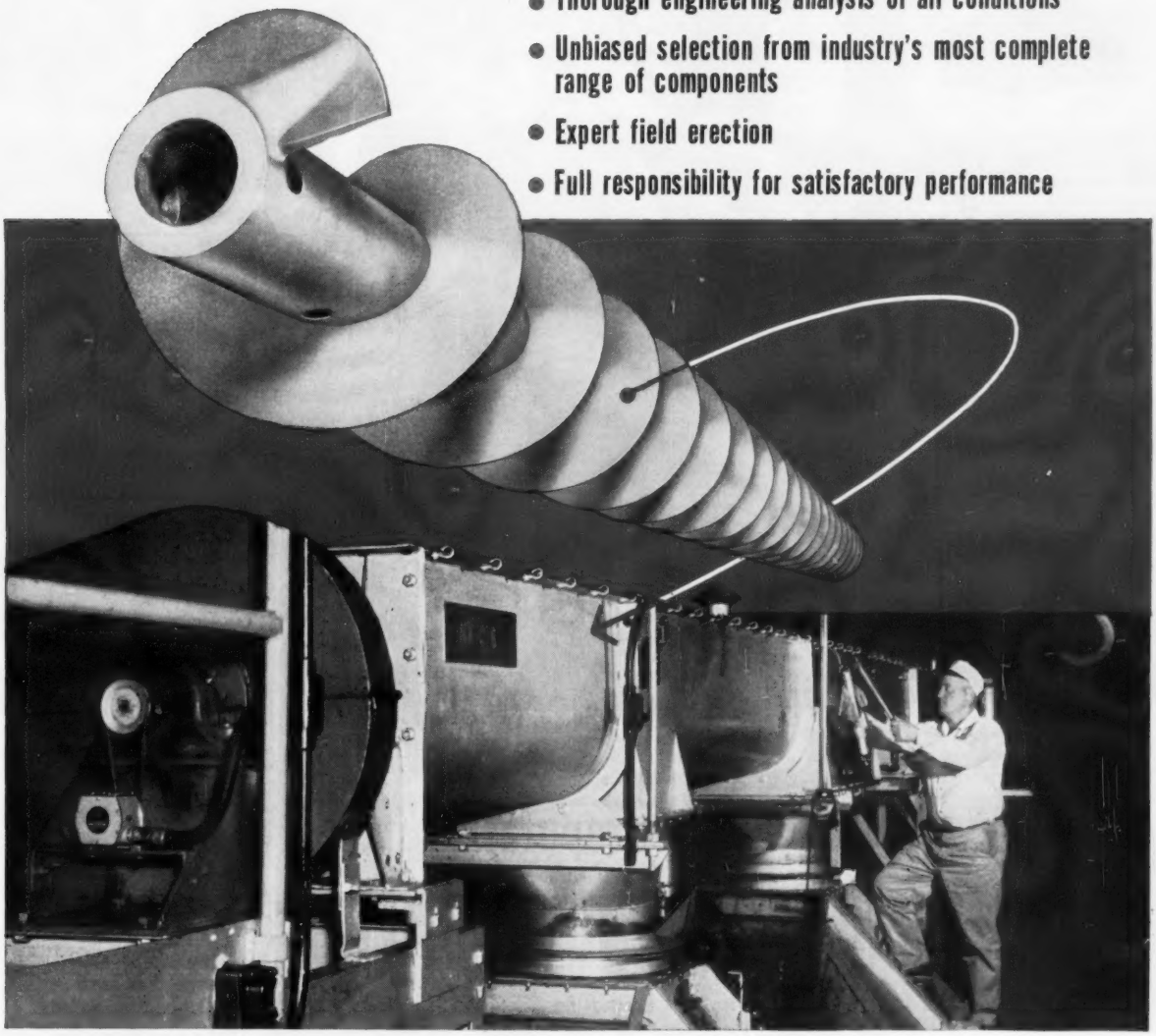
For technical assistance in developing improved food processing formulations, contact our nearest sales office or write:

CORN PRODUCTS SALES COMPANY, 17 BATTERY PLACE, NEW YORK 4, NEW YORK

Here's why a Link-Belt engineered screw conveyor installation means

a better-working system ...less work for you

- Thorough engineering analysis of all conditions
- Unbiased selection from industry's most complete range of components
- Expert field erection
- Full responsibility for satisfactory performance



FROM design of equipment to operation, you leave nothing to chance when you leave everything to Link-Belt's complete screw conveyor service. Whatever your needs, Link-Belt can engineer a system to meet them exactly . . . if desired, will handle entire erection and accept full responsibility for placing your system in operation.

Included in Link-Belt's full line of components are 17 basic screw designs, available in a variety of metals. Each offers Link-Belt's exclusive Quik-Link feature that permits fast, easy removal of any conveyor screw section or hanger without disturbing other components. An equally complete line of troughs, ball and babbitted bearing hangers, trough ends with ball bearing flange blocks and trough end seals, couplings, gates, spouts, and drives makes Link-Belt your convenient, one-source supplier for all your requirements. Ask your nearest Link-Belt office for Data Book 2289.

LINK-BELT

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SCREW CONVEYOR EQUIPMENT

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

For more data, circle 236 on Reader Sercise Card

Wortz Biscuits are manufactured in Fort Smith, Arkansas

Wortz packs a fine reputation in

HOERNER CONTAINERS

To please America's #1 Purchasing Agent, the American Housewife, the Wortz Biscuit Company goes all-out to maintain standout quality. Perfection is the password in every detail . . . from the selection of the finest ingredients to the use of the latest production techniques. And to make sure that this standard of quality is maintained to the ultimate point-of-consumer-satisfaction . . . Wortz insists on the best corrugated shipping containers. That's why Wortz has been a Hoerner customer exclusively for many years!

For an equally effective answer to your shipping problems, get in touch with a Hoerner Packaging Engineer.

Phone or write the office nearest you.

"Success is shipped in a Hoerner container"

PACKAGING ENGINEERS—
Designers and manufacturers of corrugated boxes.

HOERNER BOXES, INC.

Hoerner

GENERAL OFFICES: 600 Morgan Street, Keokuk, Iowa

PLANTS: Keokuk, Des Moines and Ottumwa, Iowa • Sand Springs, Oklahoma • Fort Smith and Little Rock, Arkansas
Sioux Falls, South Dakota • Minneapolis, Minnesota • Fort Worth, Texas • Mexico City, Mexico

COMMENTS & QUESTIONS

Pointers on Selling Ring Bell With Management

Dear Editor:

The article "Selling Approach: Key to Winning Shelf Space in the Chains", is very interesting and informative. I would like to have 60 copies to pass on to the other members of our group.—*Paul E. Hazelrig, Vice-President, Sales & Advertising, Campbell Taggart Associated Bakeries, Inc., Dallas, Tex.*

Dear Editor:

"Selling Approach" is one of the clearest and most concise presentations of the Buying Committee's activity that I have read. There were details included that even some of the more experienced had not considered as being important, or had been overlooked unknowingly.

I look forward to reading other articles like it in your fine magazine. —*David H. Burke, Executive Vice-President, College Inn Food Products Corp., Chicago.*

Dear Editor:

I found the copy of the "Selling Approach" article highly interesting. If additional copies are available I shall give them to our supermarket representatives.—*Heinz M. Glaeske, President, G. Krueger Brewing Co., Newark, N. J.*

Dear Editor:

Will you please airmail 30 copies of 'Selling Approach?"—*S. S. Langendorf, President, Langendorf United Bakeries, Inc., San Francisco.*

Dear Editor:

We would like to have another 75 reprints of "Selling Approach."—*Eric Lunau, Market Research Director, Wesson Oil & Snowdrift Sales Co., New Orleans.*

For free reprint of "Selling Approach" article, one to a reader, write key number A3 on Reader Service Card.

Ole Sage in Workshop

Dear Editor:

The Department of Horticulture is conducting a Food Processors Workshop. One of the sessions is on In-Plant Personnel Problems. For this, we are interested in obtaining reprints of some of the Ole Sage

No locked-in contamination with SPARKLER SANITARY FILTERS

A completely sanitary filter. Sparkler horizontal plates can be disassembled for cleaning all interior surfaces.

You can see at a glance why Sparkler filter plates are the most sanitary plates ever designed.

All surfaces, inside and out, are easily accessible for thorough cleaning. The top screen that supports the filter paper, a center separator, and the bottom plate is all there is to it. These parts can be separated without unscrewing bolts or nuts. The tie rods of the complete plate assembly holds the plate parts firmly together without danger of bypassing.

With most other types of filter plates the inner surfaces are inaccessible and cannot be cleaned; contaminating food particles are locked in and the first run of a new batch frequently must be discarded or rerun through the filter to obtain a pure product.

With Sparkler sanitary plates, a pure product is obtained right from the start, and continues pure with fine sharp filtration to the end of the filtering cycle.

Sparkler filter plates can be removed for cleaning in one unit and a fresh thoroughly clean set lowered into the filter tank. This reduces down time to a matter of minutes.

Sparkler filters are available in stainless steel, monel, nickel, bronze, or Hastelloy, steam or brine jacketed. Available in a range of capacities up to 10,000 G.P.H.

They are efficient in filtering all food products such as:—

Candy Scrap
Chicken Broth
Cider
Egg Albumen
Extracts
Flavors
Honey
Gums
Liquors
Milk
Molasses
Syrups
Vinegar
Fruit Juices
Alcohols
Beverages
Lard
Deep Frying Fats
Beet Sugar Syrup
Beer
Wines
Whiskies

SPARKLER MANUFACTURING CO., Mundelein, Ill., U.S.A.

Sparkler International Ltd. with plants in Canada, Holland, Italy and Australia.
Service representatives in principal cities throughout the world.

FILTRATION ENGINEERING AND MANUFACTURING EXCLUSIVELY FOR OVER 35 YEARS.

CUT CAPPING COSTS WITH CAPEM

PFEIFFER FOOD PRODUCTS, INC. recently installed this new mayonnaise and salad dressing line in their Buffalo, N. Y. plant. They chose a CaPeM, Model C-4-F for the capping operation.

This capper applies 7200 caps per hour and handles jar sizes from 6 oz. to quarts. It incorporates a special Consolidated chuck-arresting device which prevents the chuck from dropping over the jar if no cap is present. No mayonnaise ever gets on the chuck.

There are more CaPeM Screw Cappers in use than any other make. Users select them because they combine low initial cost, low operating cost, and a minimum of maintenance.

CaPeM applies any standard cap or cover and many special types at speeds ranging from 2,000 to 10,000 per hour. It handles bottles, jars, cans or jugs of any size or shape. It delivers a perfect LEAKPROOF seal.

For recommendations on improving your own capping operation, write Sales Manager, Consolidated Packaging Machinery Corp., 1400 West Avenue, Buffalo 13, N.Y.

CAPEM → THE MODERN SCREW CAPPER

Comments & Questions

Episode series which have appeared in your magazine.—Bernard A. Twigg, Processing Specialist, University of Maryland, College Park.

LPG Trucks

Question—Lately, we have been hearing quite a lot about LPG (liquified petroleum gas) fork-lift trucks. Our fork trucks in processing areas are battery-operated and in our shipping, receiving, and warehousing areas they are gasoline driven. Would LPG offer any advantages to us?

Answer—Some food processors will not permit any gasoline-operated equipment in their plants. Chief reason is that they object to the presence of exhaust fumes. It would be extremely unusual for a toxic concentration of carbon monoxide to build up, but there are often obnoxious odors from gasoline exhausts which have been attributed to odorous aldehydes. Some foods might be sensitive enough to absorb these odors.

It is claimed that, with LPG fuel, combustion is so complete that the exhaust is virtually odorless. This would seem to be a significant advantage for food processors. There is a further advantage—as compared to conventional gasoline engines—in reduced maintenance costs.

Several reasons are given: Elimination of most unburned carbon deposits, simpler adjustment of fuel jets (as compared to carburetors), less dilution of crankcase oil, and absence of fuel pumps.

This cost advantage might be substantial if you operate a number of gasoline trucks.

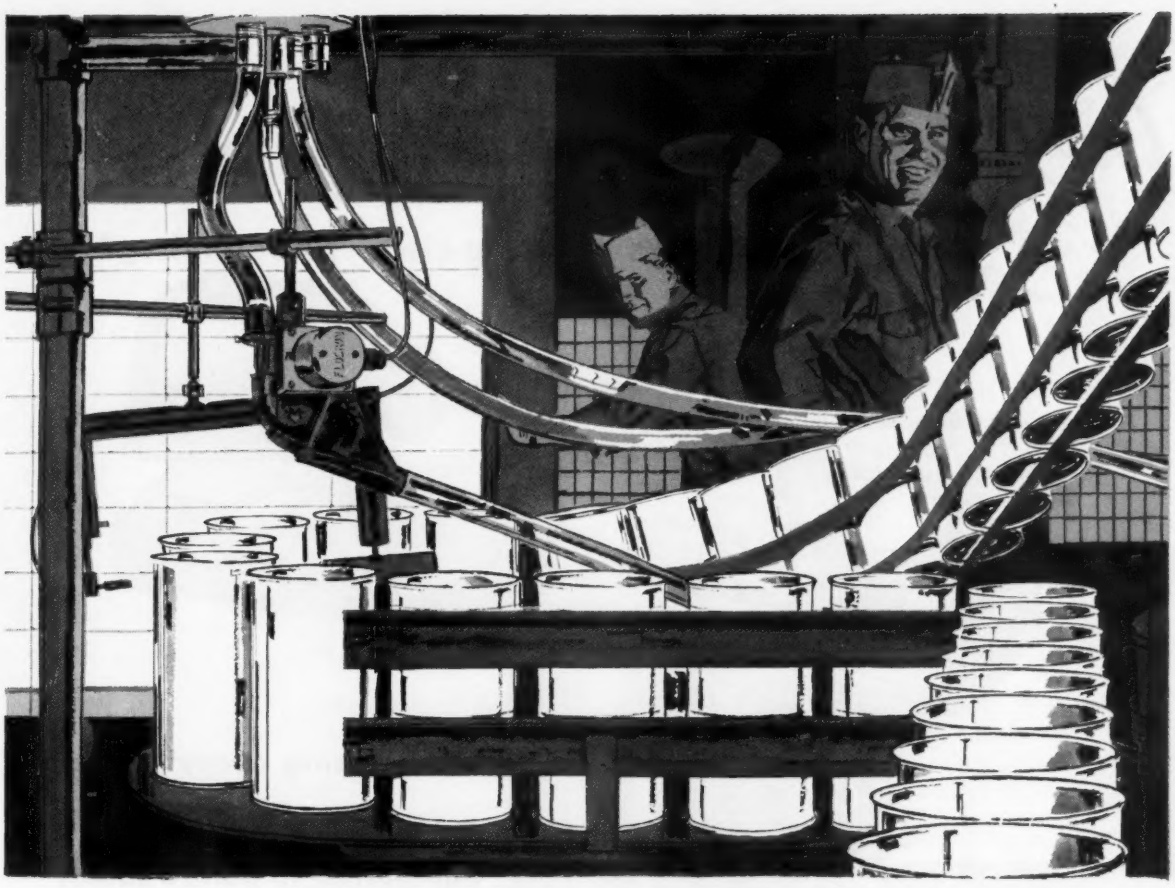
You would naturally have to check local comparative fuel costs before finally weighing the cost factor.

One word of caution is in order, should you seriously consider making this change. Highly flammable LPG fuel is stored in pressure containers. It is heavier than air in gaseous form and well-nigh odorless.

All this adds up to the need for rigorous adherence to safety codes in the use and storage of the fuel. Reasons are to avoid accumulation of gas to an explosive mixture in basements, elevator pits, or other low places in event of fuel leakage from the pressure containers. A good general rule is to store the fuel in the open and away from plant activities.

Consult your insurance carrier, local fire department, and State labor department for full details on accepted safe practices.

For more data, circle 239 on Reader Service Card



Completely new kind of dispenser!

Amazing Flocron cuts waste, saves on costly ingredients

Canners, packers and food processors who are now using the new Flocron liquid dispenser report big savings on the ingredients they use. For the Flocron avoids waste inherent in the "overflow fill" system; handles costly ingredients with money-saving speed and accuracy.

This savings is possible because the Flocron is actually a precise electronic system with photoelectric circuits to activate dispensing and assure high-speed accuracy—even on lines handling up to 300 units per minutel Easy-to-use remote electronic controls allow you to "dial" any amount of liquid you want dispensed to your lines.

Designed for efficient, low cost operation. The Flocron, made of stainless steel and plastic, is constructed to avoid costly repairs or lengthy breakdowns that can hinder your operation. There are no valves to stick or clog. The Flocron is easily cleaned by merely flushing the fluid system.

No need to revise production lines. The Flocron can be operated with existing equipment. Scientific Dispensing Company technicians are available in all areas to assist with installation and service problems.

The Flocron accurately dispenses: Brine • Hot butter • Monosodium Glutamate • Concentrated syrup • Ascorbic Acid • Brine and sugar • Spice oils • Coloring • Oil • Flavors • Chicken fat • Medicinal liquids.
The Flocron liquid dispenser is offered only by the Scientific Dispensing Division of the Morton Salt Company.

Mail coupon for more information!

Please send me additional information about the Flocron liquid dispenser.

Name_____
(Please print)

Title_____

Company_____

Address_____

City_____ Zone____ State_____

Scientific Dispensing Company
Division of
MORTON SALT COMPANY

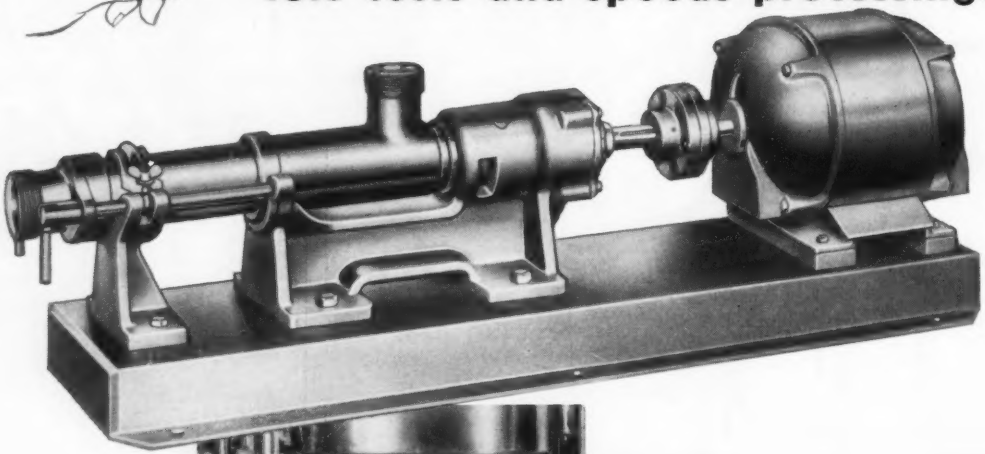
Dept. FE 6-58
110 N. Wacker Drive
Chicago 6, Illinois

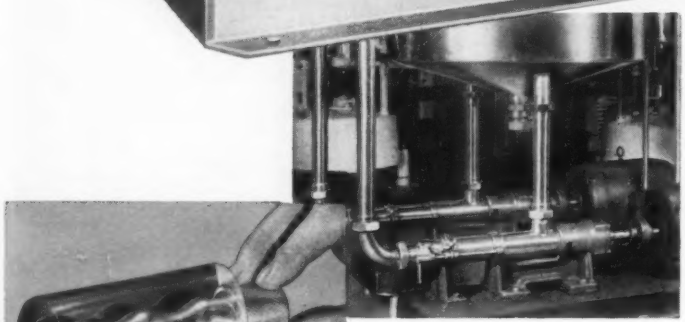
For more data, circle 240 on Reader Service Card

Quick cleaning

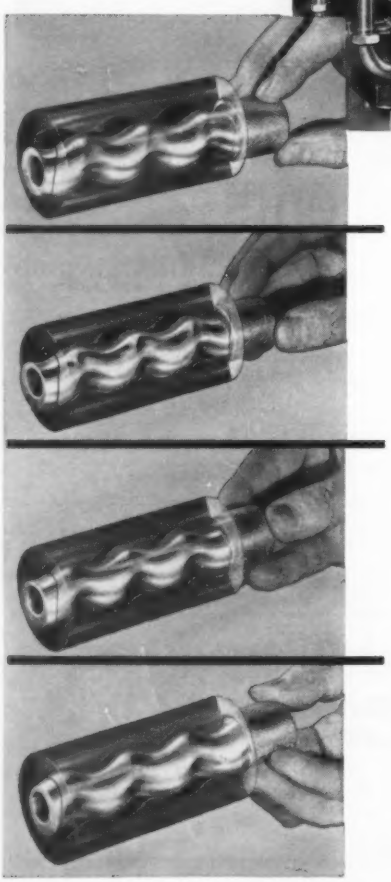
MOYNO® FOOD PUMP

cuts costs and speeds processing!





"Progressing cavity" principle . . . pumps everything from hamburger to potato salad!



With simply-designed Moynos pumping your food products, workers formerly assigned to long, costly pump cleanups can be used for other tasks! The entire Moyno unit can be quickly dismantled for thorough, effective cleaning and re-assembled in minutes. Moynos are more sanitary on the job, too. Pumping element has smooth contours which can't lodge particles where bacteria might thrive. Bearings are isolated from pumping compartment to prevent contamination by lubricant.

Moynos operate on the "progressing cavity" principle, illustrated at left. The screw-like, reversible rotor revolves in a double threaded stator, creating the progressing cavities. Material moves smoothly along, without pulsation, aeration, agitation, disintegration or contamination! All wettable parts, except stator, are stainless steel. Stator may be stainless steel, synthetic rubber, odorless bakelite or other material—depending on service. Any food product that will move through a pipe can be pumped with a Moyno—even lumpy ones like fruit cake mix!

Learn more about Moyno—the quick-to-clean pump that food can't stump. Write today for Bulletin 30-FE!

ROBBINS & MYERS, INC.

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R&M

Recession Reveals Great Future for Food

This recession can be the greatest thing that ever happened to the food industry. It can be, that is, if manufacturers capitalize on the lessons to be learned.

Pre-recession evidence pointed to factors that now are being revealed in greater dimensions. And the industry wisely has followed a course that is paying off handsomely—one that can be parlayed into something bigger.

Recent data show the extent of the current payoff, and at the same time reveal consumer traits that point to a rosy new era for food.

Wise practices paying off

Consider these facts: Business in the food industry is even better than projected at the end of 1957. Retail food sales for the first four months of this year were 9% ahead of sales in the same period of '57. And there seems to be no general downgrading in purchases. Convenience foods and higher quality items were still going strong in mid-May.

Further evidence of a continuing high level of business is the intention of food manufacturers to carry out planned investment in greater plant efficiency and capacity. Significant, too, is the fact that average net income of 46 leading food and beverage manufacturers was but 1% lower in the first three months of '58, as compared to the first quarter of '57.

This fine performance occurred in the face of a tightening of consumer purse strings and a recession in most industries.

The "Why?" behind our industry's surprising record is extremely significant. The fact that "people have to eat" does not adequately explain the success, as GMA's Paul Willis has observed. There are several other factors.

One is constant research into what kinds of products consumers want, and where and how they want those products. Followed up, of course, by translation of research findings into quality, variety, taste, and convenience for which people have expressed a desire.

Then manufacturers enhance the appeal of products through effective merchandising and promotion, stimulating people to buy.

And the industry keeps prices relatively low through steadily increasing efficiency.

As a result, Americans derive a lot of satisfaction from modern foods, at reasonable expense.

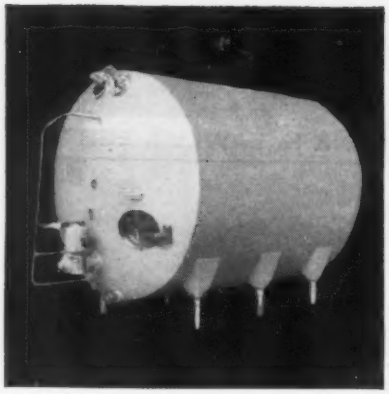
Stage is set for new era in food

And there's the touchstone to opportunity—refined living through better eating. A high degree of personal satisfaction three times a day, plus enjoyment of better health. And all this with relatively little meal preparation effort. No other product has such potent buying inducements.

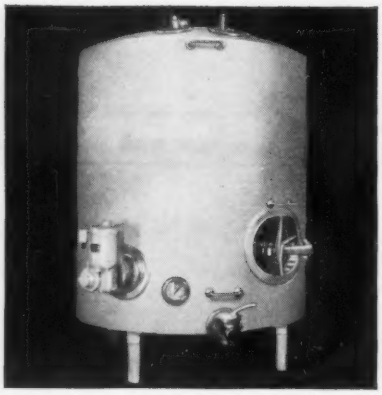
No matter what direction the recession takes, food manufacturers should do still more of what now is paying off. Then they can take the industry one step higher—into a new era of fine living through pleasant eating.

Space in the stomach is not limited in respect to quality. Expenditures for food are not limited to 25% of consumer income. Good food has become more important to people.

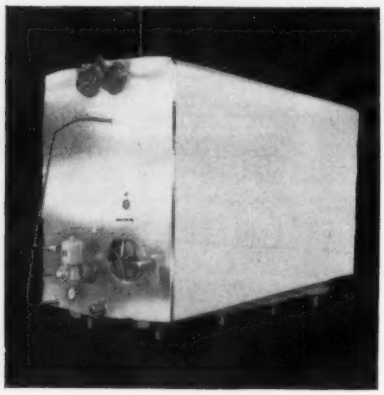
The stage is set. The script is written. Get into the act and put over a real food business "spectacular".



Cherry-Burrell horizontal insulated tanks for maintaining product temperatures; or with channel wall surface for preheating or precooling to reduce peak demand loads. Air or mechanical agitation. Standard capacities to 10,000 gallons. Special sizes available. Bulletin G-496.



Cherry-Burrell vertical insulated tanks for maintaining product temperatures; for preheating or precooling to reduce peak processing loads. All types of agitation. Save floor space. Standard capacities to 3,000 gallons. Special sizes available. Bulletin G-496.



Cherry-Burrell rectangular (super space-saver) insulated tanks for holding, heating and cooling. Can be arranged in banks for complete utilization of floor space. Standard capacities to 5,000 gallons. Specials upon request. Bulletin G-481.

All 6 look like storage tanks . . . BUT . . .

These Cherry-Burrell Stainless Steel Tanks are far more than mere storage tanks. They can be process vessels for handling a wide variety of liquids and semi-liquids . . . *in a wide variety of ways.* Ideal where sanitation and/or corrosion resistance is important.

For example, you can use them to provide "surge" for heating and cooling operations in continuous processing systems . . . to blend and preheat . . . to formulate and hold . . . to mix, heat or cool.

However you use them . . . or wherever . . . Cherry-Burrell Stainless Steel tanks can save you time and labor through controlled "in-tank" processing during off hours.

Full range of sizes (from 60 to 10,000 gallons), shapes and types available for early delivery. Ask your Cherry-Burrell Representative for details. Or write for literature.

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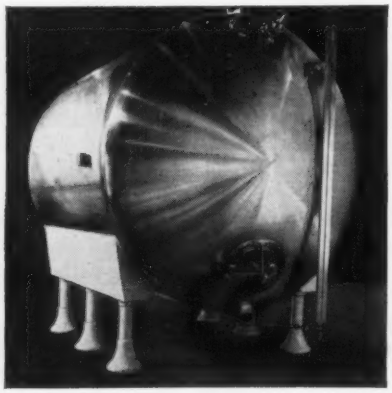
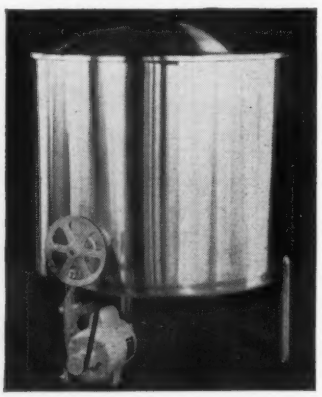
SALES AND SERVICE IN 58 CITIES — U.S. AND CANADA

Cherry-Burrell single-shell vertical tanks. For holding, mixing or blending of one or more products. Available with or without agitation. Uninsulated. Standard capacities to 3,500 gallons. Special sizes available. Bulletin G-506.



Cherry-Burrell horizontal single-shell tanks for holding, mixing or blending liquid products such as syrups, liquid sugars, corn syrups. With or without agitation. Uninsulated. Standard capacities to 5,000 gallons. Special sizes available. Bulletin G-506.



Cherry-Burrell open-top single-shell tanks for "surge" storage, side or bottom mixing. "Reverse dish" bottom. Standard capacities from 60 to 500 gallons. Special sizes available. Bulletin G-502.

For more data, circle 242 on Reader Service Card

For more data, circle 243 on Reader Service Card →

never more luscious!

Re-examination of color techniques by food processors and by color manufacturers during recent months has greatly advanced the creative use of food colors. Many processed foods now have more eye-filling appetite appeal than ever before.

Contributing to this accelerated progress in a major way, National Aniline has intensified research on new and better colors. More than ever before, our Technical Service Laboratories are doing an excellent job of formulating shades for new products and reformulating colors for established lines.

National Aniline supplies the industry's longest line of primaries and secondaries, plus practical application help based on 50 years experience. We will be glad to work with you . . . in confidence, of course.

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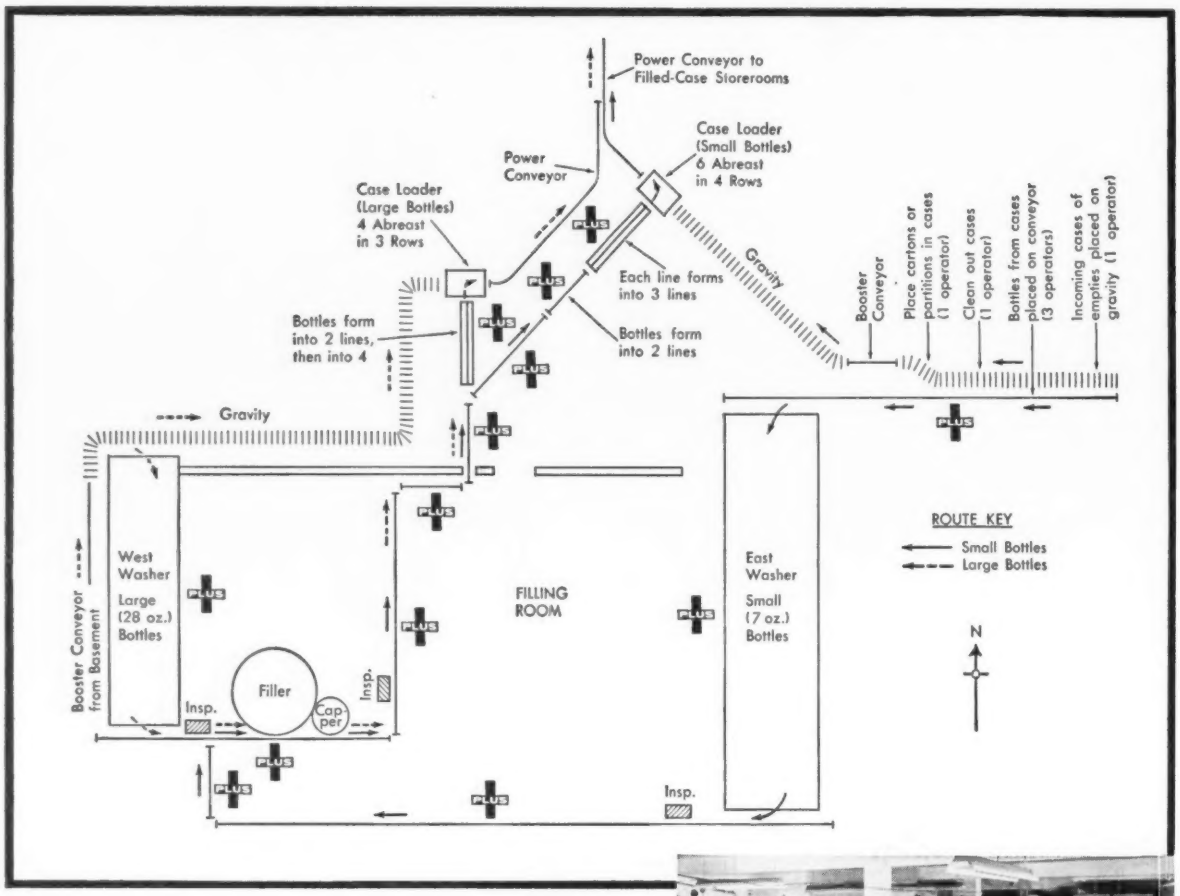


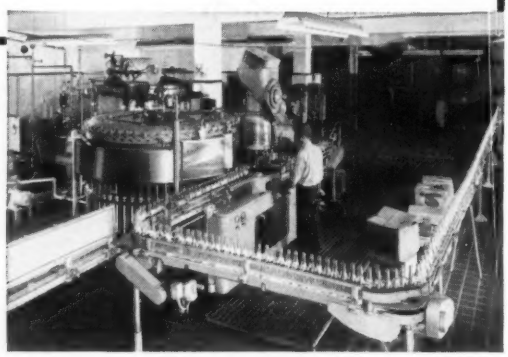
Rex TableTop® puts PLUS Value in Bottle Handling

Each "plus" in the flow diagram above represents *"plus value"* bottle handling in this large Midwestern bottling operation. The acknowledged ability of Rex TableTop Chain to provide a smooth, steady, economical carrying surface speeds bottle handling from washers to case loaders.

TableTop's simple design...just a platform link and pin... assures smooth, economical conveying and easy cleaning. Coined edges on links permit chain to slide easily under halted or jammed lines of bottles...eliminate breakage and spillage.

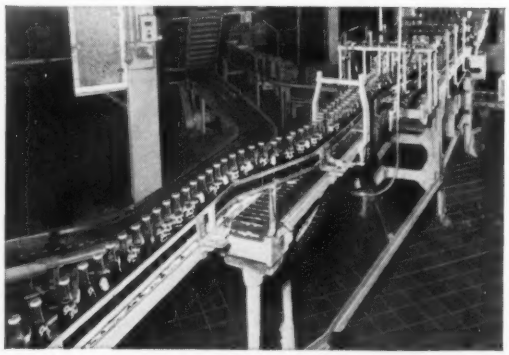
Available in steel or nylon, TableTop is the accepted standard for bottle houses the world over. Why not put the *plus values* to work in your operations. For complete data, write today for your copy of our latest TableTop bulletin. CHAIN Belt Company, 4783 W. Greenfield Ave., Milwaukee 1, Wis.

CHAIN BELT



Bottles from washer are carried to fillers and cappers on Rex TableTop.

Single- and triple-strand TableTop chains line up bottles in rows of six to feed the case loader.



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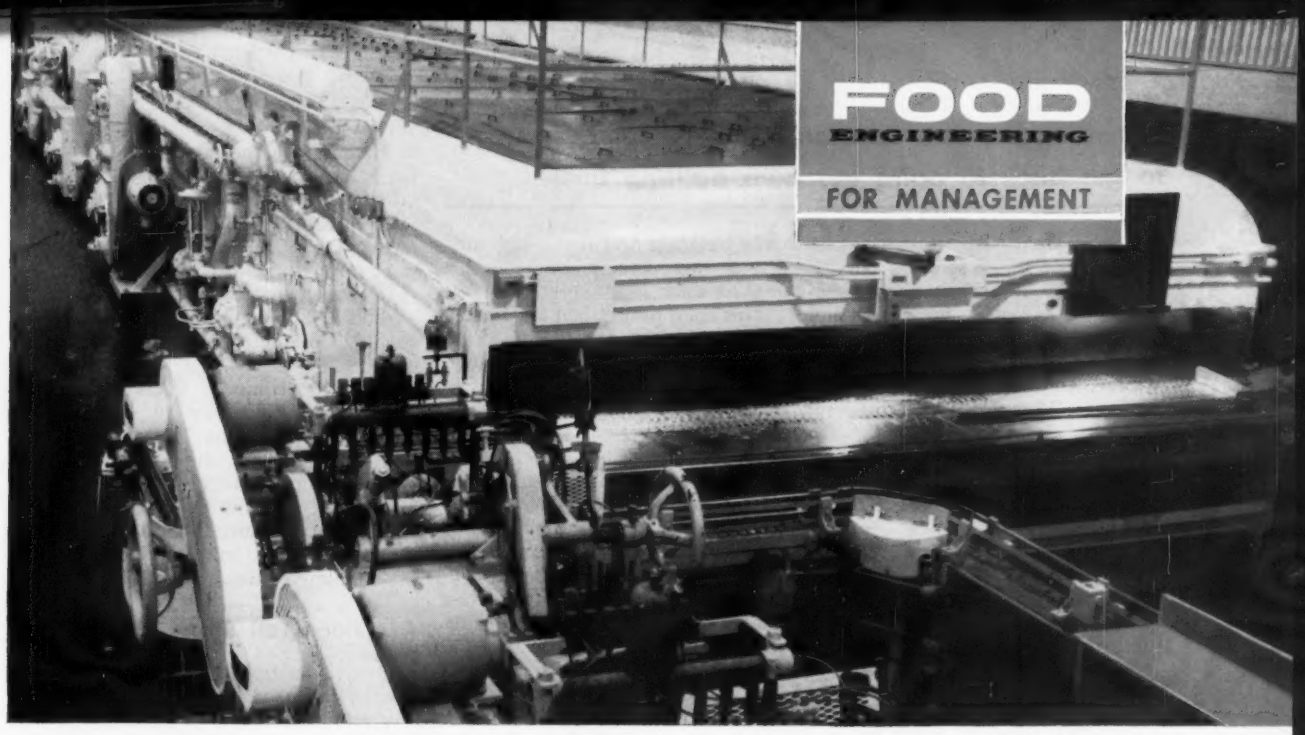

HERE'S PROOF of functional coloring's effective contrasts—the values "come through" in a black-and-white photo. Once a drab green, pasteurizer now has white body, gray top, turquoise trim. Soaker, filler, crowner, labeler, and case packer are turquoise with white trim. Rail feet and gratings are maroon to blend with tile floor. (Also see color photo on cover.)

Functional *COLOR* Pays Off

. . . As demonstrated at the foresighted Miller Brewing Co., where its sparkle adds dollars —in terms of boosted worker morale, greater safety, better housekeeping, higher community and consumer favor

"YOU MUST CAPTURE and keep the *heart* of any working man before his *hands* will do their best."

That's what Grover Cleveland once wrote to Andrew Carnegie.

A long-time endorser of this pointed theorem is Miller Brewing Co., of Milwaukee. It has constantly strived to provide its employees with the advantages of good factory environment. And this has fostered highest morale and quality workmanship.

Typical examples of such Miller improvements have been better lighting, noise reduction, air conditioning, safety practices, work-simplifying equipment, attractive plant architecture, outstanding landscaping.

JOHN V. ZIEMBA
Associate Editor, "Food Engineering"

Then recently, William H. Beers, engineering department chief, took a careful look at still another idea—functional colors. Specifically, he got to thinking of the benefits they might win in the racking room and bottle shop.

He decided that functional-color painting would banish the drab look and give new sparkle to these areas. It would play a worthy role in keeping the workers in good cheer—minimizing visual fatigue and promoting safer operations. In short, it would give a real boost to general morale.

Then, after studying the successful use of colors elsewhere, management put the plan through for the initial areas.

"We knew we had a quality product, made in quality buildings, by quality machinery," pointed out President Norman R. Klug. "Now we wanted to know what color scheme would have the best psychological effect toward even greater quality workmanship."

A refreshing tropical-isle scheme of colors was employed.

The Payoff

Immediately, the marked improvement in appearance made this color project worthwhile – even without these other very favorable advantages:

▶ **Worker efficiency.** The pleasant, cheerful, colorful workplaces increased employee morale, tended to reduce accidents and to stimulate higher quality workmanship, and gave workers new pride in their company.

▶ **Housekeeping practices.** Proud of

A visiting brewer's reaction: "Wow!–I can't wait to get back to paint our own bottling lines!"

the way their departments look, workers keep things spic-and-span.

▶**Goodwill.** In brightening these departments, public favor for the plant got a big boost, valuable in community and consumer relations. Visitors, traveling through the brewery, know Miller's as "that brewery that is so nicely painted."

Accordingly, the functional-color project is now being extended to all 15 bottle-shop lines as well as other departments.

Planning for Color

This color project was given a great deal of thought. Hues were carefully previewed to eliminate any untoward or clashing effects. Each machine had to have color-harmonizing paints that blended well with the rest of the department.

Soon after beginning its color-thinking, the company weighed the idea of complementary colors to reduce eye-straining glare at bottled-beer inspection stations–where diffused light is employed. In this case, pink backgrounds were first tried as the complement to the amber-colored beer. But inspectors balked at the pink, thumbed it down. They preferred the original white.

From here, the engineering department moved on to the painting of the racking department–thinking primarily of shades of color that would enable the workers to do a better quality job.

On the point of color selection, it must be kept in mind that there are about 150 distinguishable hues and many thousands of tints and shades. With such a variety to choose from, it is understandable that individual preferences do enter into the picture.

But the engineering department wanted to test the color idea before calling in a color authority. So this challenging department – racking – was re-painted on the basis of current color preferences. Hues considered ran from brown to coral, medium gray, medium or dark green, and the less prominent shades of blue. Finally, the equipment and air-conditioning units were done in turquoise and tan, respectively, while walls and ceiling got a bright white.

Results were extremely encouraging. Workers sang praises of the new color scheme, saying it brightened the department and made their jobs more pleasant. And it was indicated that it gave them additional pride in their work.

This color project had taken engineering skill, plus a dash of the artist and something of the psychologist.

Consultant Called In

Satisfied that it had demonstrated what could be done with colors, the engineering department then thought of tackling other departments. But before proceeding, it asked a local industrial design firm–Brooks Stevens Associates–to come up with a color scheme to increase the quality of workmanship.

In short the company engineers didn't think of themselves as color experts. Their main consideration was to avoid project slip-ups.

The consultants looked over the entire plant, and suggested starting with the bottling lines, which are viewed by streams of visitors. Here, considerable study centered on the questions: "What color should be used for the largest equipment on the bottling line–the pasteurizer? And what hues should be chosen for the remaining units?"

Surveys indicated that, since Miller High Life is a food product, the idea of purity should be stressed. And since the pasteurizer is the outstanding unit on the line, it should be painted to symbolize purity–white.

Turquoise was then chosen (independent of the engineering department's knowledge) for the other equipment – soaker-washers, fillers, crowners, labelers, and case packers– along with a white trim.

It was not that turquoise complemented the white but rather that it, too, stressed the notion of purity.

Brooks Stevens submitted its recommendations to engineering. But before proceeding, the question of color for the walk-on top portion of the pasteurizers arose. A white wouldn't do, for this would show footprints. So gray was used to dress up this section. Also, a turquoise trim was added for the pasteurizer.

Often the color of one or two important surfaces is already established, and can't be changed. For example, the white tiled walls, white ceiling, and red-colored floor tile in the bottleshops. However, the colors selected for the equipment resulted in a harmonious combination.

How the painting would be made to comply with the requirements of the safety department was still another problem. Color coding of the safety guards in yellow would prove an eye-sore. But safety engineers came up with a satisfactory solution.

It was felt that most safety guards on bottleshop equipment did such a good job of protection that it was unnecessary to use the distracting yellow color. However, where attention should be drawn to certain guards–like those on the take-off belts–the painting should be for contrast–thus white.

Equipment hand rails, too, are white. And pasteurizers' steam pipes are coated with temperature-resisting aluminum paint.

Reactions Tell Story

One visitor from another brewery reacted with a very expressive, "Wow!–I can't wait to get back to paint our own bottling lines!"

Paul Trapp, a 20-year veteran on the Miller bottle lines remarked: "It brightens up the packaging plant and makes the job more comfortable."

Ed Schuster, in packaging for 13 years, added: "The paint job serves a double purpose. It reflects more light for us to work by and also makes a man want to do neat work in its cheery, clean atmosphere."

Then engineering was swamped with calls from administrative personnel complimenting the new sparkle added to the bottling line. Other departments also wanted to know when they'd get similar treatment.

The management was extremely pleased and gave the OK to proceed with the remaining bottling and canning lines, as well as other departments where feasible.

Engineering is now proceeding with the production lines, in piecemeal fashion as they are shut down for annual overhauling. By Fall, the job will be half-finished, then completed within a year.

In order to proceed with the next steps in the color program, Brooks Stevens has again been contacted. And so recommendations are now coming up for color schemes to be adopted in remaining areas. These will be painted in accord with normal rotation schedules–1, 3, or 5 years, depending upon area activities.

Some areas, of course, will not require repainting. The brewhouse, for instance, doesn't need it because it consists primarily of tile surfaces and brightly polished brew kettles. –*End*

IRRADIATED FOODS: What Will It Take to Sell Them?

These new sterilized products may be a while in coming—but it's not too early for this penetrating analysis of merchandising problems and possible solutions

E. W. CHESTER
Project Director, J. A. Ward Inc., N. Y. C.

WE GRANT that, as consumer items, irradiated foods are still "in the future."

But when they do become available — as they certainly will — why should the housewife adopt such a new type of preserved food when she already has at her disposal several others she's tried and still likes?

Without doubt, foods preserved by radiation sterilization will have to offer exceptional qualities, and be promoted intensely before they gain the consumer acceptance of frozen or canned items. Acquired habits are not easily changed in so conservative a field as nutrition.

Of course, the advantages of irradiated foods may eventually prove so numerous, consumers will not have to be asked twice to seek them.

For example, pork free of trichinosis has great appeal. Potatoes that can be kept for months without sprouting or rotting are very attractive. Fruits and vegetables that are fresh and tasty after long storage are excellent buys, indeed. And how about chicken or hamburger that doesn't lose its taste, flavor, or color, even if stored for some time without freezing?

Let us explore the pros and cons of consumer acceptance for irradiated foods, also their effects on present merchandising methods.

There are a number of factors already gaining acceptance for irradiated foods:

1. Publicity—Considerable information on radiation sterilization has appeared in newspapers and magazines. Although much of this publicity was overly enthusiastic in its claims, it had undeniable value. Misleading as it was, it did the important job of acquainting the consumer with the fundamentals and laid the foundation for future serious promotion.

2. Military participation — The Army's genuine interest in food irradiation, also its leadership and sustained effort during years of pioneering research, will undoubtedly influence the public. Acceptance and use of controversial foods by the armed forces is of utmost importance because civilian dietary habits have been changed by military practice.

How great this influence was in the past or may be in the future is a matter of conjecture. One may argue that since military men have little to say in matters of choice, the question of voluntary acceptance remains open.

3. Institutional buying—Purchasing by hospitals, orphanages, schools, and prisons, which may follow adoption of sterilized foods by the Army, could further develop the market for irradiated products.

4. Growing population — A new

"Their wide acceptance cannot come without intense consumer education."

type of preservation may find a ready following among the increasing number of young families, which are less prejudiced. That they are eager for convenience is demonstrated by the fact that younger people are the best customers for frozen foods.

On the other hand there is the serious obstacle of *fright*, which may offset some of these benefits.

Fear of mysterious things connected with atomic bombs and lethal radiation fallout may create in the public's mind a definite aversion to foods treated by such a process. The mere assurance that rays go through the product without leaving any dangerous residue may not sound sufficiently convincing to consumers who prefer not to experiment.

And of course, people in a competing camp may easily increase the scare by spreading rumors.

Consumer Education Vital

Wide acceptance of irradiated foods cannot come without an intense program of consumer education. The public will have to know all the facts. It will have to be assured that technical problems were entrusted to experts who handled them with extreme caution. Their exhaustive studies will have had to establish the near-absolute certainty of safety. Finally, this work will have to be backed by continuous inspection that gives the 'green light' only to 100% safe products.

Foods are approached with more caution than any other consumer article. Generally, they are bought by women who know that the family's health depends on product quality. Furthermore, to cook the way mother did is still, for many housewives, an ideal, a way of life. And mother didn't use irradiated foods!

True, mother and grandmother may not have used frozen juices and vegetables or canned soups, either. But aren't they now on almost every pantry shelf? This fact just illustrates the point—the number of years it took frozen and canned goods to get consumer approval. Frozen meats are still frowned upon by many buyers. And among frozen foods, there is a characteristic scale of greater and lesser acceptance.

When frozen items were first introduced, sellers had to face long-standing consumer prejudice against 'cold storage' foods. Such products were associated in the public's mind with inferior quality. Both consumers and retailers had to be convinced of their high quality by an educational program that lasted for years.

In 1937, annual per capita consumption of frozen fruits and vegetables was less than 1 lb. It increased to almost 8 lb. in 1950. Stimulating the demand was the fact that during World War II frozen foods were taken off the ration list a year and a half before canned goods. In any case, it took about two decades for frozen foods to establish a solid market position.

For the sake of accuracy, it must be noted that special circumstances made distribution and merchandising of frozen food difficult. These included the need for refrigerated storage facilities, and for educating the consumer to handle and prepare the 'new' product properly. Fortunately, this problem will not have to be faced by irradiated foods.

Stubborn consumer prejudice against frozen meat has not been totally overcome despite 20 yr. of intense effort. Sale of frozen meat proved less important than originally anticipated, and no substantial volume has developed in hard-frozen packaged steaks, chops, and roasts. Discoloration in the product as a result of freezing, coupled with long thawing time, were sufficient to discourage discriminating consumers.

Advertising and personal selling were largely responsible for the expanding sales of frozen fruits and vegetables. The frozen-food branch conducted one of the most extensive and effective educational campaigns in American business experience.* Emphasis was put on product quality (freshness, flavor, ripeness, goodness), convenience, and economy. Success of the campaign based on these three selling points may be measured by the tremendous response of a public that had virtually ignored the products previously.

Meat packers, too, have been consistent users of all forms of advertising.

To tell people about meat, American Meat Institute carried out a national educational campaign that lasted 9 yr. First, a coast-to-coast study of public attitudes was undertaken to find out why people eat meat. In 1940, they most often cited taste and enjoyment as the reasons.

But the goal of the campaign was to make the American public aware of the fact that meat is "a basic food, always in season, rich in many elements essential to good health."

When a second survey was made in 1947, using the same investigative technique, results proved that the "education" had been well assimilated. Whereas in 1940 people referred mainly to taste and enjoyment as reasons for liking meat, in 1947

"After irradiation, many formerly perishable items will be packaged and introduced as non-perishable or semi-perishable products."

they gave motives involving health and nutrition just as frequently.

Among the 255 companies which in 1953 spent more than a $1 million each for national advertising, there were 49 engaged in selling food.** Thus, General Foods spent $30 million, outdistanced only by three concerns in this country, General Motors, Procter & Gamble, and Colgate-Palmolive. Campbell Soup had an advertising bill of more than $11 million, Swift an expenditure of $10 million, and Quaker Oats spent more than $8 million.

*Mentley, G. L., "Frozen Foods: A Marketing Case History," a chapter in *Food Marketing*, McGraw-Hill Co., 1950.

**Frey, A. W., *How Many Dollars for Advertising?* Ronald Press Co., N. Y. C., 1955

After irradiation, numerous varieties of formerly perishable products will be packaged and introduced as non-perishable or semi-perishable. Thus, if a company selling canned soups should decide to market fresh sterilized tomatoes, peas, or spinach —the same vegetables from which its well-known soups are made—it will have to spread the good word about "new, less perishable" vegetables.

New-Product Opportunities

Entirely new foods, like tropical fruits now under embargo, may appear as a result of radiation sterilization. Foods formerly unobtainable in some regions, because of distance from producing centers and spoilage en route, will become available through preservation by irradiation. These items will bring new advertising expenditures.

It is reasonable to expect that fresh pork will be sold on the West Coast. Fresh oysters, which lend themselves perfectly to irradiation, might become a non-perishable item.

Finally, any branding of irradiated prepackaged meats, fish, fruits, and vegetables would require extraordinary advertising effort to create brand preference.

How About Pricing?

Cost of conventional food processing may be summarized as follows:

Frozen foods—2 to 3.5c per lb. plus 0.2 to 0.4c per lb. for freezing.

Canned goods—0.15 to 0.5c per lb. for heat-processing of vegetables, and 0.8 to 5c. per lb. for meats.

Although the ultimate cost of processing irradiated food is still uncertain, it appears to be at about the highest figure for canned meat and frozen food. It is definitely higher than that of heat-processing canned vegetables.

If radiation were to be used where there is no satisfactory alternative, the question of cost would be of little importance. In other cases, only a marked advantage in product quality resulting from cold sterilization will justify a higher price. If radiation is to be used in combination with mild heating, a new form of canned food will emerge at a price different from that of conventional canned products. Use of less expensive containers may eventually reduce the price differential.

Few industries operate on as low a markup as the American food industry. Typical corporate chains work on a gross margin of 14 to 18%. Wholesalers get 8 or 9% over cost. Those who use the cost-plus-service-fee system operate at 4¼ or 5%. Cash discounts and other income and allowances turn the loss into a small profit.

Such marketing costs are unusually low when compared with other major consumer-goods industries, thus there is little possibility of reducing them further. An increase in the price of food due to a change in preservation method is unlikely to be absorbed by the middleman or retailer. It looks as though it will have to be passed on to the consumer.

Will Markets Be Disrupted?

Channels of food distribution have been molded by many variable forces —consumer preference, perishability of product, seasonal factors, dispersion of growers and processors, advent of new products and packaging.

Fruits and vegetables are sold at local, country, and large central terminal markets, as well as being distributed to canneries and freezing plants. Various types of marketing agencies or middlemen intervene in produce distribution.

However, sales, to canneries in producing areas constitute an important outlet for growers. For the country as a whole, about 50% of fruit production and 60% of truck crops are usually marketed in fresh form, the remainder being used for processing.

Assuming that radiation sterilization will decrease the perishability of produce, how will such a development affect different markets, particularly the central terminal market? Will it contribute to its demise and to the closing of all intermediary agencies operating there?

It all depends on the volume of products diverted for processing by radiation. This portion may actually be insignificant. If radiation sterilization cuts into other forms of preservation, like canning or freezing, to get its share at the expense of canned and frozen foods, the percentage of fruits and vegetables to be sold in an unprocessed state will remain unchanged. It is only if the portion of produce to be irradiated should reduce the volume of fresh foods, leaving much less for sale, that the terminal market can be affected. Such an event is extremely hypothetical.

Never has a technique of preservation supplanted all other methods. And never have preservation methods done away with fresh produce. Huge quantities of fresh fruits and vegetables will probably always remain on the market, if only by the will of consumers. Any moderate loss which may occur at the terminal market will be compensated by greater demand due to continuous population growth. These circumstances should safeguard the present structure of the terminal market from any revolutionizing changes.

Radiation sterilization may open a market for specialized brokers and wholesalers. It may also induce local growers or groups to enter the business of selling varieties of prepackaged irradiated fruits and vegetables.

"Centralized pre-packaging of irradiated meats and produce will bring many new brand names."

In the meat branch, the most notable change in distribution would result from an accentuation of decentralization. Shipping of refrigerated dressed meat is costly when compared to shipping of livestock. Some packers looked for a solution in regional slaughtering operations. However, they are a handicap in making large shipments of desired cuts to specific areas.

Irradiation provides an answer. Preserved cuts of a superior grade could be shipped, without risk of spoilage, to areas where they are sold at higher prices. Small decentralized plants would thus have an increased source of income, thus would be in a position to continue operating.

Boost for Prepackaging

Successful irradiation of produce would open the way to retail prepackaging at the central level, a development that could greatly reduce spoilage and produce-department labor costs. Moreover, by speeding customer traffic it would enable

In every day's production—

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For all your meats, you can improve flavor, color and tenderness with Clinton products in your curing solutions. And, you can be sure that Clinton corn syrup (dry or liquid) and *Clintose*® dextrose will produce these results every time, because:

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Your Clinton salesman can help you select the right products to cure your meats as you want them. And, should you need special production advice, *prompt* technical service is available when you need it. Call your Clinton salesman today, or write:

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greater efficiency, higher sales, and lower prices.

In the meat field, there are a number of "mother" stores—central points from which pre-packaged cuts are distributed. But for the most part, red meats are still cut and pre-packaged by hand in retail stores. Risk of spoilage en route and short product shelf-life now tend to make pre-packaging at the packer or wholesaler level unprofitable.

Surface irradiation of meat would permit centralized pre-cutting and pre-packaging. Products could then be sold without additional processing at the store. Reduction of waste through centralized pre-cutting should raise profit margins for both producer and retailer.

In addition, retailers often suffer considerable loss from slightly discolored meat. High-grade cuts have to be ground into hamburger, or even sold as scrap at ¼c. A preservation method that could prevent such losses would cure one of the greatest problems in meat retailing.

Unrefrigerated transportation of meat would also result in great savings. But the greatest profit opportunities for companies selling pre-packaged meats would stem from building brand names.

More Branded Perishables

Identification or branding is important for any product whose distinctive features cannot be evaluated at first sight. Consumers rely upon brands in their repeated purchases.

However, many classes of foods have never been branded, not because the practice wouldn't interest processors and consumers, but for reasons of product perishability. You don't attach your name and reputation to a product that can spoil overnight!

If irradiation could assure a longer storage life for such perishables, new marketing possibilities would develop. Branding, especially by firms with national reputations, would greatly facilitate advertising and mass merchandising of irradiated foods now considered perishable. In time, they could be just as familiar to the public as most branded items are today.

Finally, irradiated foods will face competition not only from products conventionally processed, but also from those preserved by chemical and biochemical methods. Among the latter techniques is use of tetracyclines on poultry, which is gaining importance. —*End*

Path Ahead Eyed by Millers

Tomorrow's needs, today's strides are sifted at meeting of American Assn. of Cereal Chemists—

Urges Action for Growth

It will take increased efforts in the line of advanced developments—new products and expanded markets—if flour milling is to assure its future growth.

This was emphasized by John P. Snyder, v.-p. of Pillsbury Mills.

Spotlighting trends and problems, he accented lagging sales, with per capita consumption of wheat flour products having dropped from 211 lb. in 1910 to 118 today. During this same period, population jumped 85%, but total flour consumption climbed only 2%. And while population gained by more than 11 million in 1953-57, our total domestic use of flour has stayed at an almost constant 205 million cwt. annually.

The main factor behind this decline, he said, is increased competition from other foods—thus emphasizing the need for more development and promotion.

Facts Still Missing: Much remains unknown, he continued, about flour and its by-products. Because of lack of quantitative specifications of flour, testing techniques are not standard.

In addition to providing more material for promotion, new research should help to dispose of the tremendous amounts of by-products which have been crowded out of feed mills by cheaper materials. New outlets for these by-products will increase their value, lowering flour costs and prices.

Latest Technical Advances

Way to retard bread staling: Since firming of starch is caused by crystallization, staling can be delayed by adding the heat-stable enzyme amylase, or other agent to break up the continuous network of crystalline starch. Addition of either hydrophilic colloids, such as gum arabic or carboxymethylcellulose, also is effective. It is theorized that colloidal materials bind some of the water to reduce staling.—*Cereal Corps Laboratory, USDA, Peoria, Ill.*

Improved drying of wheat gluten is achieved by dispersing it in highly dilute acetic acid. The acid protects the protein during drying on a conventional steam-heated drum. —*Northern Regional Research Laboratory, USDA, Peoria, Ill.*

Better starch and gluten separation from wheat flour is effected by the continuous batter process, which involves simpler equipment, less power, and less water than does conventional wet milling. High quality undenatured gluten and prime starch are obtained, and the process recovers the soluble fractions at low cost.—*Northern Regional Research Laboratory, USDA, Peoria, Ill.*

Nitrogen can be determined in bulk materials by irradiating a sample with fast neutrons from a 5-curie polonium-beryllium source, utilizing the hydrogen in the sample for moderation. A 'capture' gamma ray spectrum is created, consisting primarily of the hydrogen line plus the capture spectra for sulfur and nitrogen. Intensity of the nitrogen line determines concentration.—*Dr. J. Tittman, Schlumberger Well Surveying Corp., Houston, Tex.*

Instant bread mix, requiring only addition of water for preparation of a complete dough, has been developed. Conventional fermentation steps are eliminated by using new formulations that include chemical leavening agents and dry flavoring materials. Requirements in production time, equipment, and manpower are reported cut about 70%—*Army Quartermaster Food & Container Institute for the Armed Forces, Chicago.*

Corn-Derivative Progress

Conversion of dextrose to levulose through new enzymatic means has now been perfected, said Robert G. Ruark, technical v.-p., Corn Products Refining Co. He stated that—

Steepwater will make new products valuable to a wide range of users. Selective fractionation will be employed here.

Ultrasonic rupturing of the starch-gluten bond, coupled with electrical or magnetic separation, has possibilities.

An economical substitute for cellulose can be provided by high amylose corn. —*End*

Ole Sage Episode

Is *Merit Rating* Worth What It Costs?

"LUKE MARKHAM, here, just told me his company's going in for merit rating, Batt Bulwark announced derisively to the group gathered around a game of pinochle at the Guff & Gripers Spring Outing.

"In my book", continued the Mull & Mull Co. works manager, "merit rating's for the birds. It costs too much hard cash. And what do you get back for what you spend? That I'd like to know!"

"Batt, I suppose you must have some very specific reasons for damning merit rating", ventured Luke. "If so, I'd like to hear them. Has your company had some unfortunate experiences?" Luke questioned. "Or are you just ag'in merit rating on general principles?"

"Most strongly on general principles," admitted Batt with a sarcastic chuckle. "But also I can tell you that at M&M we've had plenty of experience with rating. Sad, sad, sad."

"How about some details, Batt, of your company's experiences with merit rating," prodded Luke.

"Sure," agreed Batt willingly. "Since I was ag'in it from the start, I am more than glad to tell you what a flop it was." Then Batt gloatingly explained further: "Foremen did the rating, of course, who else? So, if a foreman liked a guy he rated him up. On the other hand, if he had it 'in' for a worker, he rated him down.

"'Twasn't long before everyone else in the company was ag'in rating just like me. Except, of course, for a few apple-polishing 'teacher's pets,'" Batt added with relish.

"That was before the unions took over. In fact, it's always been my opinion that our workers joined the union more to get rid of merit rating than for any other reason. At least", he grinned, "the union quickly put an end to all employee ratings at M&M—and I hope it's for keeps."

Batt belittled: "Merit rating's for the birds! Takes too much hard cash! And what do you get back for what you spend?"

At this point, due to twilight's approach, the card game broke up. Barney Hasbrook, one of the kibitzers, addressed the player who was gathering up the cards: "Ole, you heard Batt condemn employee rating. Won't you tell us your views and what's been your experience?"

"No doubt," responded Ole Sage, "Batt firmly believes that M&M's employee rating, merit rating, or accomplishment reporting — whatever you call it—came to an end many years ago when his company's planned system was discarded due to union protests. However," Ole assured the group, "those employees are still being rated, and to a considerable degree rewarded or punished accordingly."

"Your trolley's off the wire, Ole," Batt cut in heatedly. "There's no merit rating whatsoever at M&M—and as long as I'm works manager," Batt boomed, banging the table with his fist, "there won't be any."

"Batt, if you'll just answer a question or two, maybe we can clear up some misconceptions regarding employee rating," Ole suggested.

"As usual, Ole, you're baiting a trap for me," Batt countered. "But this time I know it. So go ahead, shoot!"

"Well," said Ole, "a year or so ago you told us the approximate number of foreman M&M employed. Since then you've expanded consider-

IVAN C. MILLER
"Food Engineering"

ably, so you must have over 50 in first-line management today. Right?"

"Right," Batt agreed.

"Now," continued Ole, "if an opening for an assistant superintendent came up tomorrow, would you know which foreman to promote?"

"Of course," Batt snapped instantly. "As a matter of fact, we're promoting one this month—to replace a department head who is retiring. Nat Golong is the fellow we're promoting," Batt added.

"And why did you choose Nat?"

"Fortunately," came back Batt, "the general superintendent and I agreed on Nat 100%. You see, for some time I've known he's a real 'comer,' a hard worker who learns fast. Gets along with people—bosses, too. And what makes a hit with me, wherever you put him, he rolls out production. He's the kind that will keep on going up. Our general superintendent's also mentioned these things about him, and . . ."

Batt abruptly paused, grinned sheepishly with embarrassment, then admitted, "You've sprung the trap, Ole. And it looks like I'm caught! But wait, we didn't use any *merit rating* on Nat. We just used our *judgment*—judgment based on long experience."

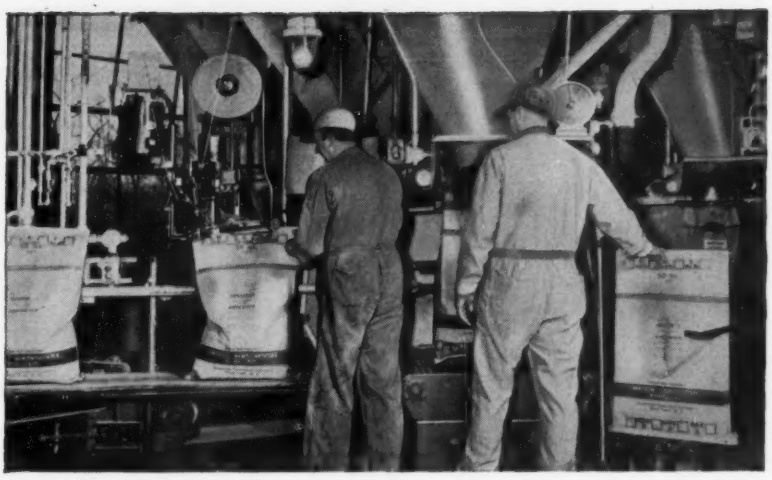
"**Batt, you knew exactly** the man to replace your retiring assistant superintendent," Ole pointed out to him. "And I'll bet you know also—and just as accurately—which of the others in your second-line management are most valuable, and which weakest. All your life, Batt, you've rated those you deal with, whether you have realized it or not."

"In a way, I guess, you're right," Batt admitted. "But in my job I certainly *have* to know who I can depend on and who I can't".

"Of course," agreed Ole. "And I've no doubt that your judgment of those who can get out the production is sound. But how dependable is the random, unchecked judgment of your various foremen, who rate workers and associates day by day, hit or miss, without pattern or guidance?"

Ole pressed on: "To face the facts, we must admit that all employees rate all others they work with. Employees rate their bosses, too.

"Everyone employed is rated," Ole concluded, "at least in one way, and



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1. **Minimize Weight Give-Away.** Frequently, you're forced to set mean bagging weights high, to prevent falling short. With an inaccurate scale, you can lose more than $10 an hour through weight variations—especially when bagging at high speeds. Many processors have solved this problem by installing Richardson bagging scales. With average accuracy of ± 1 to 2 oz. or better, they prevent overweights and underweights, year after year.

2. **Spend Less for Bags.** You may be paying good money for nothing but "air space" in filled bags. A Richardson G-73 Impacker can end this waste. The Impacker is a simple, compact accessory that quickly "shakes down" material as it fills bags. Thus, you can pack any given quantity into smaller, neater bags. The money you save—on bag size alone—can bring you profits well beyond the cost of this equipment.

3. **Speed Up Production.** Example: the Duplex Richardson E-50 Bagging Scale can turn out twenty 100-lb. bags per minute. It's only one of many Richardson models for handling flour, sugar, rice, feed, and chemicals, in bagging ranges of 25-250 lbs.

4. **Cut Excessive Labor Costs.** Are your bagging operations overmanned? Some installations require expensive standby labor. You can cut out this cost—sometimes as much as one-third of regular labor costs—and free labor for productive work, by installing *automatic* Richardson bagging equipment. Time and labor-saving accessories include automatic feeders, sewing conveyors and pedestals, bag-holders, as well as packers like the Impacker described above. Low-cost automatic proportioning systems are Richardson specialties, too. Simple design makes maintenance easy. Any maintenance man can understand a Richardson. And, *only* Richardson maintains a nationwide service organization that can serve you *within 24 hours,* if necessary.

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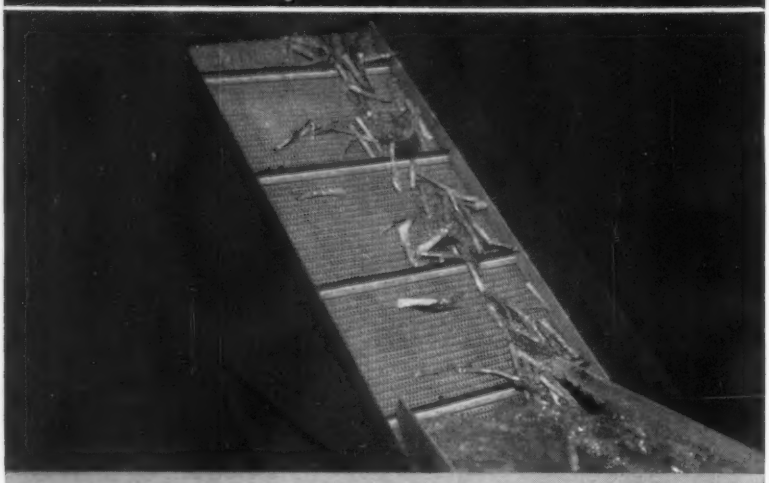

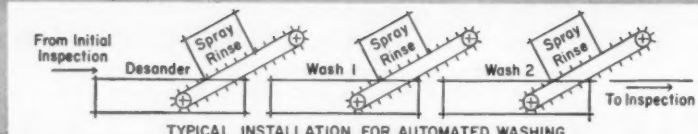

TYPICAL INSTALLATION FOR AUTOMATED WASHING

METAL-MESH BELTS PROTECT FLAVOR, QUALITY IN CONTINUOUS PROCESSING

Continuous washing, blanching, freezing and packaging on Cambridge Wire Mesh Belts give you more uniform, high quality products, help protect food flavor and taste appeal. All-metal belts can't rust, rot, or absorb odors; can't contaminate foods. Wire mesh is cleaned quickly and thoroughly with steam or spray rinse. In baking, cooking, cooling and inspection operations, too, Cambridge Belts help increase production and reduce manual handling. Here's how:

CONTINUOUSLY MOVING BELTS ELIMINATE BATCH PROCESSING—help maintain capacity production and lower operating costs.

OPEN MESH PERMITS FREE CIRCULATION—air or process solutions pass freely through the belt for uniform processing or flash drainage of solution.

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SPECIAL SURFACE ATTACHMENTS AVAILABLE—raised edges or cross flights to hold product on belt during movement.

Talk to your Cambridge FIELD ENGINEER soon—he'll explain the many advantages of continuous food processing on Cambridge Wire Mesh Belts. He'll recommend the belt size, mesh or weave—and the metal or alloy—best suited to your operations. You'll find his name in the classified phone book. Or, write for FREE 130-PAGE REFERENCE MANUAL giving mesh specifications, design information and metallurgical data.

The Cambridge Wire Cloth Co.

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Department Q, Cambridge 6, Maryland

OFFICES IN PRINCIPAL INDUSTRIAL CITIES

that is, 'How well does he do his job?' A lesser number may be given an additional rating, 'Is he promotable?' "

"**We'll all agree,**" Barney chuckled, "that we measure the other fellow to see how well he does his job. As for that other rating," he lamented, "I sure wish there were more in our company worth watching to see if they were promotable."

"I'm glad you all go along. And now here's the prime angle we shouldn't overlook," Ole said, bent on driving home his point. "Whether or not the method is given a name, such as merit rating, or follows a formal system, rating of everyone from bottom to top goes on in every company, in every plant—continually. What's more, this rating does cost money, as Batt's already remarked. And the price, often quite high, must be paid.

"Fortunately, the cost may finally show up on the *profit* side of the ledger and not on the loss side. Results from well-planned and executed procedure can add measurably to profits," Ole assured the group, "just as haphazard ratings can raise costs and cut profits. And actually unfair ratings can lead to strong worker resentment — which regardless of cause, is never good. A rebellious attitude lowers morale, cuts production.

"Before we break up, I'd like to register a warning," Ole counseled. "It's this: A mistake in M&M's personnel management 18 years ago could be quite serious. But considering the present high-cost labor and the dominating strength of unions, a blunder by management in personnel relations is likely to be *many times* more costly today."

"**Ole, you imply** that merit rating can be profitable," Ed Strong broke in. "Now that raises some questions. You recall that Batt said employees at M&M objected to the company's rating system. Well, how do workers take to rating now that more modern methods are used? Also, on what factors should ratings be based? And there's another thing. Finally, I'd like some real detail on what it is that makes a merit rating systems successful, and how is such success measured?"

"As usual, Ed, you come out with a bunch of questions just when time's running out," Batt complained. "Look how dark it's getting. I'm getting on home."

"At least," Ed flung out the last word, "we've got something hot to start on next time we meet."

For more data, circle 247 on Reader Service Card

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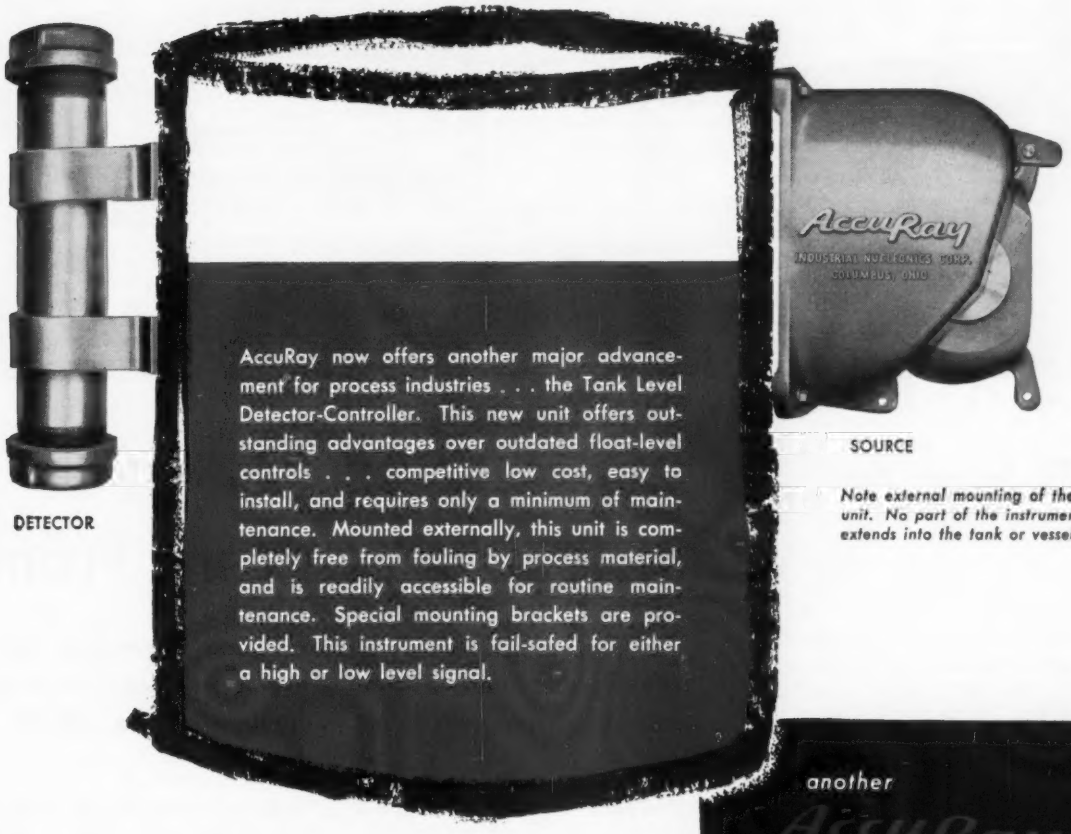

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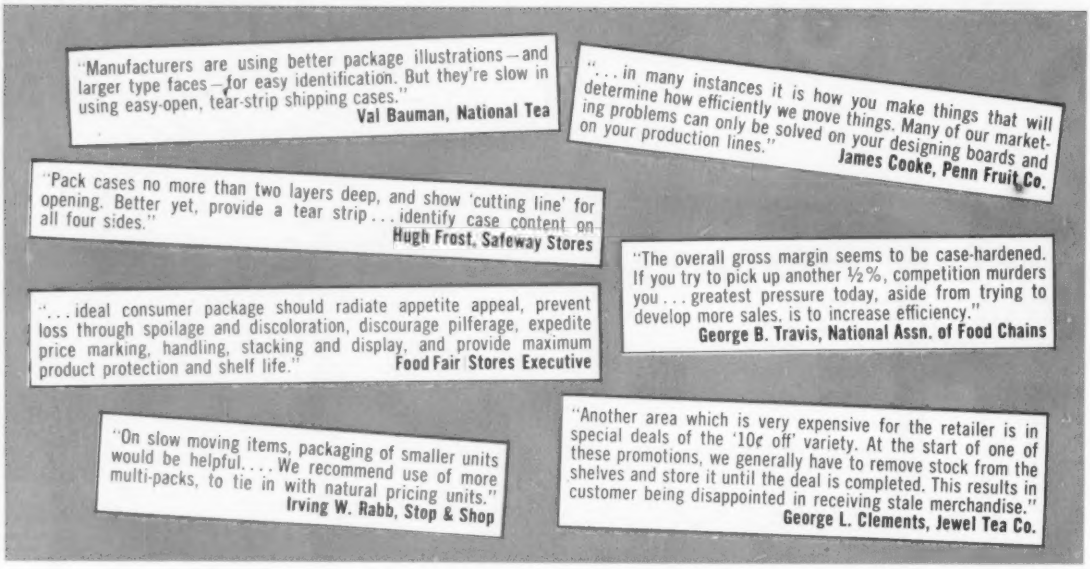

"Manufacturers are using better package illustrations—and larger type faces—for easy identification. But they're slow in using easy-open, tear-strip shipping cases."
Val Bauman, National Tea
"... in many instances it is how you make things that will determine how efficiently we move things. Many of our marketing problems can only be solved on your designing boards and on your production lines."
James Cooke, Penn Fruit Co.
"Pack cases no more than two layers deep, and show 'cutting line' for opening. Better yet, provide a tear strip... identify case content on all four sides."
Hugh Frost, Safeway Stores
"The overall gross margin seems to be case-hardened. If you try to pick up another ½%, competition murders you... greatest pressure today, aside from trying to develop more sales, is to increase efficiency."
George B. Travis, National Assn. of Food Chains
"... ideal consumer package should radiate appetite appeal, prevent loss through spoilage and discoloration, discourage pilferage, expedite price marking, handling, stacking and display, and provide maximum product protection and shelf life."
Food Fair Stores Executive
"On slow moving items, packaging of smaller units would be helpful.... We recommend use of more multi-packs, to tie in with natural pricing units."
Irving W. Rabb, Stop & Shop
"Another area which is very expensive for the retailer is in special deals of the '10¢ off' variety. At the start of one of these promotions, we generally have to remove stock from the shelves and store it until the deal is completed. This results in customer being disappointed in receiving stale merchandise."
George L. Clements, Jewel Tea Co.

FE Survey Spotlights

What Retailers Want From

Hard-pressed sellers call for goods and promotions that will help them improve their operating efficiency—so your packaging-selling efforts are being judged extra critically.

THAYER C. TAYLOR
Associate Editor, "Food Engineering"

LIKE the food manufacturer, today's supermarket operator is caught in a vise of rising costs and falling profits. Fatter payrolls and increased equipment costs in the 1946-56 period sent net profits before taxes skidding from 2.9% of sales to 2.3%. And the stepped-up tempo of today's competition clamps a tight lid on compensatory price hikes.

So, the only way out for the supermarket operator is increased volume and improved operating efficiency. Consequently, this means your packaging merchandising program will come in for closer scrutiny.

There are several reasons why you should make sure your marketing program is geared to today's supermarket selling. First and foremost, it's to your own self-interest. Penn Fruit's James Cooke candidly sums it up this way:

"By designing your products to solve operational problems (at the retail store) you can do as much as your sales force to sell your product and keep it acceptable to the retailer.

"As the impartial purveyor of all the brands, we retailers view with immense calm the claims of competing brands. We can, however, get very enthusiastic about case and package improvements that recognize our operating problems."

Also, as the deluge of new products adds fuel to the battle for shelf space, retailers will examine packaging more critically when judging which brand to take on and which brand to throw out to make room for the newcomer. In fact, during a recent 6-months period, 47% of the retailers checked in a Folding Paper Box Assn. poll criticized products be cause of poor packaging.

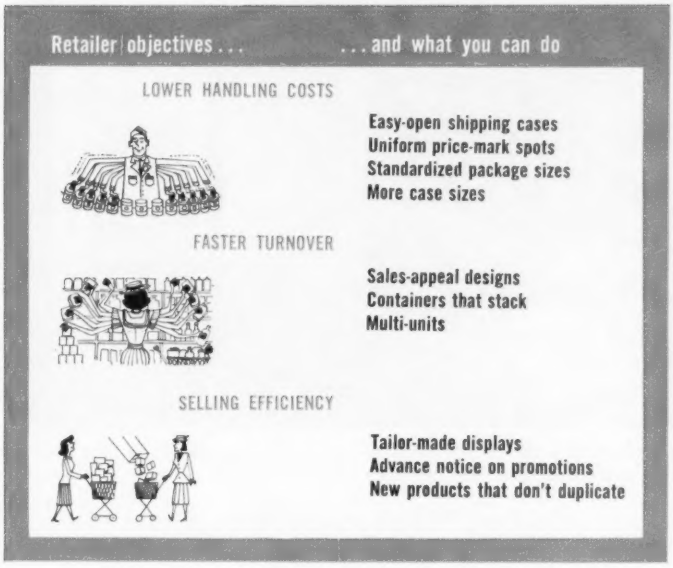
This means that in addition to its traditional role of the "silent salesman" your package must take on a second function—cost cutting.

Called for by retailers is packaging that fits in with the conditions of supermarket selling—fast handling, fast turnover, fast customer service, and minimum inventory. Retailers in a recent poll said that better packaging could cut their operating costs 4.5% and increase sales 7.4%.

What are the packaging improvements retailers want? Here are some suggestions turned up in a survey by FOOD ENGINEERING:

▶ **Easier price marking.** "Marking of prices is a very important and costly operation (store clerk wages have increased 94% in the past 10 years)," says Irving W. Rabb, Stop & Shop. "It would be most helpful," he goes on, "if there were adequate marking spots on packages to simplify this procedure." Pointing out that an easily seen price is a powerful on-shelf selling force, C. M. Newman, Hinky-Dinky Stores, argues that hampering price marking throws away that opportunity.

▶ **Good stacking.** Crowded store shelves call for packages that can be piled one atop the other as well as permit maximum facings in minimum space. Serious offenders, according to Val Bauman, National Tea, are containers that are too tall to stack, or which have spouts, handles, and fancy tops that hinder nest-



Food Manufacturers

ing. Glass jars with ridges on the bottom so that containers can be tiered without cardboard layers get strong endorsement.

▶ **Standardized sizes.** Too many different package sizes for the same product—such as cake mixes and breakfast cereals—dissipate shelf impact and lead to extra crowding. Retailers are especially critical of manufacturers who try to usurp extra shelf space by designing packages that are unusually broad in front and narrow in depth. Such containers are usually placed end-out on shelves, which means the brand design is hidden.

▶ **Better coding.** Although it's especially important for perishables and semi-perishables, few manufacturers follow a universal coding system, says James Cooke. Retailers need such a code to check product freshness, he says. Other store operators want the code placed on the bottom of the package so it won't conflict with the price mark.

▶ **More effective designs.** For the most part, manufacturers are using better sales-building package illustrations, observes Val Bauman. The trend to simpler illustrations and larger type for easier identification sits well with retailers. Also welcome are designs that put product and brand identity on the top (enabling shoppers to recognize them on lower shelves without having to bend down) and the sides of the package.

Where package appeal falls down, retailers feel, is in the sameness of design and color that comes from lazy copy-catting.

▶ **More multi-units.** "Packaging items in groups creates efficiency," George L. Clements, Jewel Tea, declares. "For example, six cans of orange juice in a sleeve results in two handlings and prices-marks instead of 12 for the same quantity." He strongly recommends "additional research into the quantities that the average purchaser buys at a time," as a fruitful source of more savings.

Another retailer suggests that multi-packs be designed for end display as a means of saving shelf space.

▶ **Stronger protective wrappings.** A Food Fair executive believes that "in the area of prepackaging perishables, we need an inexpensive material with the visibility and appeal of cellophane, but with more durability and more effectiveness in retarding discoloration and spoilage."

Leaky milk containers, cake mix boxes that buckle, and cookie bags that don't prevent crumbling also draw retailer criticism.

"Manufacturers do not always give adequate thought to the strength of the carton that will carry their product in shipment," says George Clements. "Sometimes items packed in glass, or products like cake mixes that fill the package, are asked to carry the load which should really be borne by the shipping case."

The recent FPBA survey found retailers asking for improvements in: Trays for chicken parts; window boxes for frozen food specialties; product-visibility wraps for meats, dairy items, and baked goods.

Retailer interest in improved packaging covers shipping cases, too. Here, they want:

1. More sizes. As a Food Fair executive puts it, "If case sizes were realistically related to rate of product movement, so that items that move twelve cans a week do not come packed 48 to the case, further savings are possible." Reason for this is that retailers don't want inventory dollars tied up in half-used cases that lie around in the backroom for weeks.

2. Better handling. George Clements advises that "manufacturers should consult with retailers so that shipping cases are of a size and shape which facilitate efficient handling. Square cases are hard to work with and do not stack easily without shifting or toppling. It should be just as easy to pack a product in oblong cases, which are easy to handle and which can be overlapped for stacking, thereby minimizing shifting."

3. Easy opening. Cartons that indicate the cutting line, or have built-in tear strips, speed up product handling, in the opinion of Safeway Stores' Hugh Frost.

4. Faster identification. Printed cases that describe product contents and sizes are rated superior to plain cases that have hard-to-read ink stamping, in the opinion of Val Bauman. Other retailers suggest that cases be identified on all four sides to simplify recognition.

5. More strength. Stronger boxes that protect the product against the rigors of in-transit shipment are considered a must by retailers. Damaged merchandise not only throws a monkey wrench into a retailer's inventory control system, but also contributes to out-of-stock conditions.

Retailers are also looking to manufacturers for help in controlling operating costs through more effective merchandising at the store level. Here are some areas where your selling dollars can do double duty.

(*Turn page*)

Displays. Point-of-sale pieces are recognized by retailers as effective follow-ups to advertising programs. But store operators feel that too much of this material ends up in the wastebasket because it isn't adaptable to in-store conditions. To avoid this waste, manufacturers should check with the operator to find out if their material is flexible enough to fit in with his store.

Demonstrations. Val Bauman feels demonstrations can be effective in announcing a new product or dramatizing a package change. But otherwise, they become a promotion gimmick, and slow up store traffic. Other operators stress that the retailer should be given adequate sample stocks for demonstration use.

Coupons. These are the pet peeve of retailers, the feeling being that they slow up work at the checkout counter and run directly against the fast-consumer-service concept. A Super Market Institute poll discloses that almost half of the retailers, to avoid jams at the checkout point, don't match individual coupons with purchases, but just lump them all together and deduct the total rebate from the shopper's bill—even if she didn't buy the couponed items. This means you pay for merchandise that wasn't bought.

Where the manufacturer feels coupons are necessary, operators advise, he should employ a standard size, and never place them on packages where shoppers tear them off.

Stock control. Consistent delivery schedules that will keep a retailer from losing sales through out-of-stocks are a serious need, operators feel. And they want advance notice on forthcoming promotions so they won't be caught short when customers look for a promoted product.

New Products. Although retailers appreciate the importance of new products in building sales, they feel that at least one of out of every three new items merely duplicates an already existing product. These imitators don't build overall volume, operators say, but only divert unit sales from an existing product.

"New" products that are merely the same product in a new package size come in for retailer censure. Especially when the manufacturer does not recall the older size.

Promotions. Advance notice of from two to six weeks is asked for by Val Bauman. This gives the operator a chance to set the proper wheels in motion and to make sure he has enough stock on hand. —*End*

READING MATTER for new mothers has handy suggestions on baby care and nutrition, helps build favorable corporate image for Gerber.

Direct Brand Promotion

—is Gerber's strategy in mail program that gets to new mothers just when they're most open to advice on baby feeding

PRE-SELLING POTENTIAL customers gives you an edge over the competition by making shoppers think of *your product* when they're ready to buy.

Whether this pre-sell is on target is often decided by timing. And this is especially true if your product appeals to a certain segment of the population.

Baby foods maker Gerber Products, for example, must start building brand loyalty early—so it beams a direct mail program at new mothers at the moment they're looking for the right foods for new-borns.

By timing the mail advertising to reach mothers when they're most receptive, Gerber gets good readership. And by leavening its promotion message with service-type information on baby care, it shapes sales-producing consumer response.

Fueled by the postwar baby boom, the company's "Dear Mother" direct mail output has accelerated in recent years—from 4 million mailings in '48 to 6 million in '57.

Program's purpose is to build a favorable image of the company in the mother's mind at the "very start."

"Since the material reaches her when she's most interested in choosing food for her new baby," explains Ad Director Kenneth Baker, "the literature receives good readership."

Mailings go out in two stages. The first piece, a "personalized" congratulatory message, is signed by Mrs. Dan Gerber, wife of the firm's president (and mother of five, as the letter points up). Using the homespun approach, the letter underscores the importance of a varied diet in the formation of good eating habits.

With the personal touch established, a second letter is sent to the mother 5 or 10 days later. Included in this one are attractively illustrated foldout booklets, also samples.

One folder, keyed to the cereal samples, cites how these products answer the baby's hunger for something other than liquid foods.

Another brochure, looking to future sales, focuses on the high-chair set, and plugs the "grown-up" flavor of Gerber's "Junior" line.

A soft-sell approach characterizes all of the company's direct mail pieces. By taking the "friendly" tack, Baker adds, "we stand a better chance of winning the mother's confidence."

The mail advertising campaign blankets a broad area—reaching mothers in every state in the Union, and in 2,100 of the 3,076 counties in the U.S. —*End*

FOOD NEWS FROM Pfizer

Quality Ingredients
For the Food Industry
For Over a Century

IMPORTANT DEVELOPMENT IN FORTIFICATION...NOW! FOR THE FIRST TIME...VITAMIN A FORMS WHICH WILL DISSOLVE IN MILK OR WATER WITHOUT AFFECTING TASTE...TECHNOLOGISTS SEE IMMEDIATE POTENTIAL FOR THESE NEW TYPE PFIZER CRYSTALETS® IN INSTANT BEVERAGE POWDERS ...OTHER PRODUCTS TO FOLLOW.

Pfizer research has developed many improved forms of vitamins which made possible new products and new competitive advantages for existing products. Now, Pfizer offers its CRYSTALETS (dry, free-flowing beadlets of vitamin A, or A & D) in two new forms—one dispersible in milk or water at room temperature, the other dispersible in milk or water that is ice cold.

Neither form affects the taste of the drink. Write for technical information on CRYSTALETS—Type W and Type M.

★ ★ ★

New Protection For Cheese Products With Pfizer Sorbistat®

A selective antimycotic agent, SORBISTAT (sorbic acid) effectively inhibits growth of many molds, yeasts and certain bacteria which cause spoilage. It does not interfere with normal microbiological curing of cheeses. Also, at normal use levels, SORBISTAT does not affect the appearance, taste or odor of any food product. Discover for yourself how SORBISTAT can keep your foods in better condition. Write for technical literature and a sample.

★ ★ ★

Want An Outstanding Emulsifier?

When you emulsify your cheeses with Pfizer Sodium Citrate, you build in quality and appeal. Your product will . . .

- keep a uniform "just right" texture
- melt smoothly and evenly
- spread to perfection after long storage

Also try it for making extra smooth ice cream. Pfizer offers a variety of forms: Sodium Citrate Anhydrous, U.S.P., VIII, and Monosodium Citrate.

★ ★ ★

Bottles Really Sparkle

By using Pfizer Sodium Gluconate or Gluconic Acid in your hot caustic cleaning solutions, you increase the efficiency of your bottle washing operations. Wide experience has proven Sodium Gluconate to be the outstanding sequesterant for preventing precipitation of calcium and magnesium salts. Write Pfizer today for complete technical information. **CHAS. PFIZER & CO., INC., Chemical Sales Division, 630 Flushing Ave., Brooklyn 6, N. Y., Branch Offices: Chicago, Ill., San Francisco, Calif., Vernon, Calif., Atlanta, Ga., Dallas, Texas**

ONLY NESTAWAY gives you FLOW OF MOTION FROM THE WRAPPER—

TO THE CONSUMER—

FROM wrapper to consumer Mid-West's Nestaway System provides maximum handling efficiency. In freezing operations, order make-up, transporatation, door-to-door deliveries and in-store use. Nestaway racks, illustrated, rack dividers and castered bases provide a "flow of motion" no other handling system offers. Filled racks stack easily. Empty, they nest to save you up to 78% in valuable floor space. Rack dividers double rack capacity for shallow baked goods. Castered bases provide easy movement of stacked or nested racks. Covered by U.S. and Canadian patents.

Write today for FREE Brochure

MWM

NESTAWAY

"Engineered Material Handling Systems"

MATERIAL HANDLING DIVISION

MID-WEST METALLIC PRODUCTS, Inc.

450 FILM Bldg. - CLEVELAND 14, OHIO

CASE HISTORY OF MONTH

From the files of *National Consumer Panel Division of Market Research Corp. of America.* Material is factually correct. Identities of products and companies have been masked to insure anonymity.—The Editors.

Child's Age Gives Sales Clue

Management's problem

OUR BRAND'S SALES are declining. We are No. 3 in our field and are losing ground. This is a particularly grave situation because total sales of our product are relatively modest. Consequently, shelf space is severely limited, and we face the ever-present danger of losing exposure.

Our product, though bought by adults, appeals mainly to children. We suspect that "age bias" is responsible for our sales problem, but aren't sure. Obviously we must make changes, either in the product or in its marketing.

What Would You Do?

Management's decision

Management turned to the National Consumer Panel to find out these three things: 1. Specific age levels at which our brand is strongest. 2. Effect, if any, of an older child on a younger child in the use of our brand. 3. How the child-age pattern in families who bought our brand compared with the age pattern in families which bought the leading brand.

Result of action

To determine the product's age-level popularity, researchers tabulated the purchases of families with only one child. These families were grouped according to the child's age—that is, families with a one-year-old child, a two-year-old child, etc. The percentage of families within each group who bought our brand in a six-month period showed the purchase rate for each child-age level.

To see if older children influenced the buying habits of the younger ones, researchers studied the purchases of families with two children. Household units were placed into four groups: (1) Both children under 7 years, (2) one child under 7 and the other in the 7-14 age bracket, (3) both in the 7-14 bracket, and (4) one child in the 7-14 bracket and the other one in the 15-17 bracket.

The third question was answered by applying the same technique to families who bought the leading brand, and then comparing the results.

Findings clearly indicated that our brand's strength was concentrated in the 4-7 year-old group, that a definite weakness existed where the child's age exceeded 7 years, that the 7-14 year-olds had no negative effect on our brand, and that the leading brand was stronger at age levels above 7 years.

This information led management to redirect its advertising efforts in order to broaden the brand's franchise and reach the 7-14 year-olds. An improved sales picture resulted.

For more information, write to Case-History Editor, FOOD ENGINEERING, 330 W. 42nd St., New York City 36. Your inquiry will be directed to the source of the case-history item.

all you have to do is **whistle**

...and DuPont's new technical service will be there to help you solve your painting problem!

That's right. We WANT you to make your painting problem OURS! Recently, Du Pont set up a special technical service group. Duty: to help plant maintenance men cut the cost of protecting equipment. This new technical service group is ready to assist food companies just about anywhere in the country . . . and that means YOU.

Du Pont's facilities, chemical competence, research and paint-making experience are at your beck and call. Your Du Pont paint representative will be happy to put you in touch. Any time you need us, JUST WHISTLE! E. I. du Pont de Nemours & Co. (Inc.), Finishes Division, Dept. FE-86, Wilmington 98, Delaware.

DU PONT PAINTS

Better Things for Better Living . . . *through Chemistry*

For more data, circle 251 on Reader Service Card

For more data, circle 252 on Reader Service Card

HERE'S PHOTOGRAPHIC PROOF

Color plates made from unretouched E-ktachrome transparencies

This unretouched photograph reproduces the colors of the eight principal types of Flo-Sweet as precisely as possible with modern printing techniques.

Compare, if you will, Flo-Sweet liquid sucrose with distilled water. You can hardly tell the difference! Because color is a good indication of sugar purity, this is one proof of the efficiency of Flo-Sweet's refining techniques.

Note particularly the color of the melted granulated, shown at the same concentration of sugar solids as the liquid sucrose. This, we think, proves our contention that you can't get quality liquid sugar by mixing granulated with water.

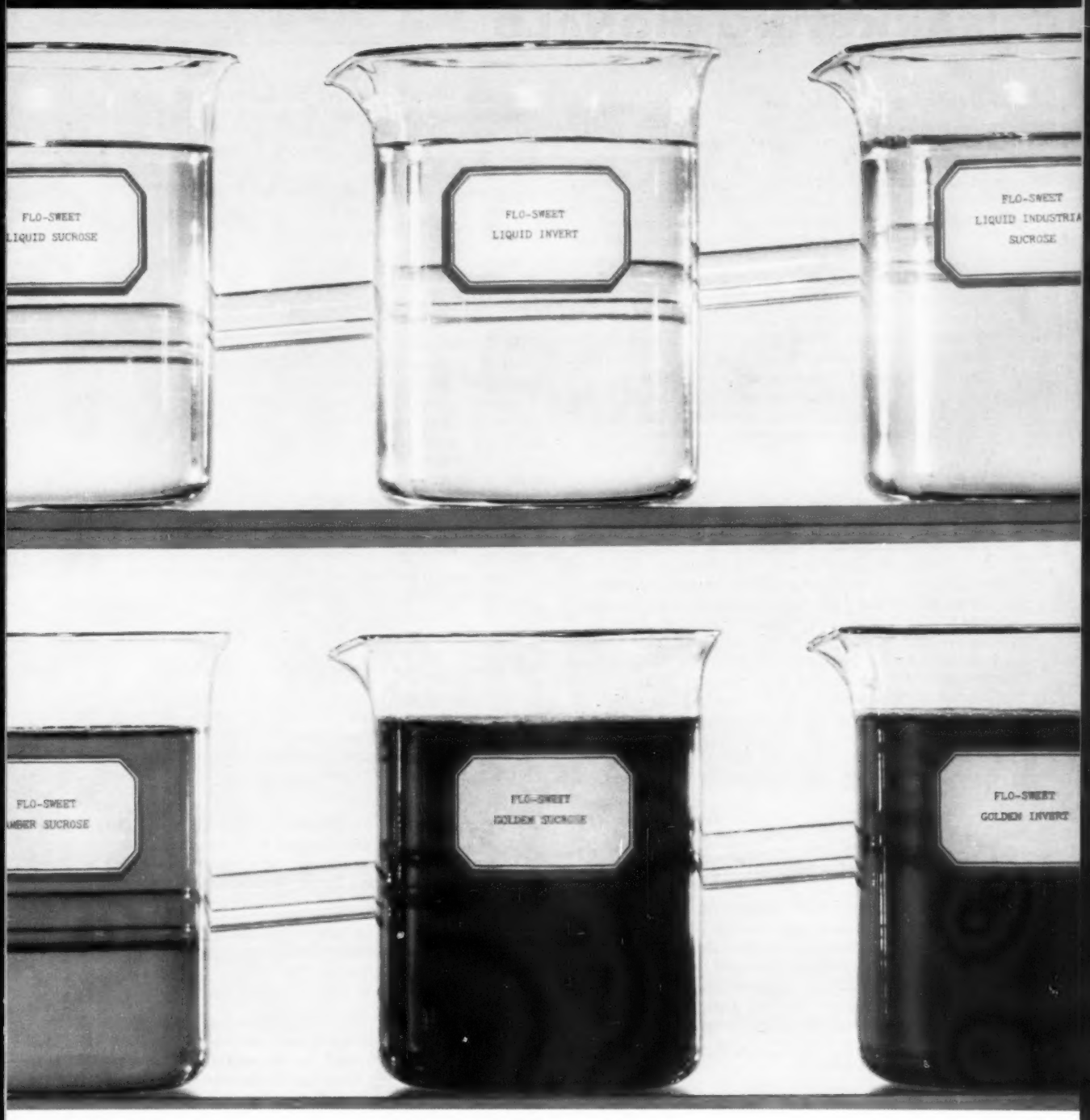
FLO-SWEET

FIRST IN LIQUID SUGAR

REFINED SYRUPS

SERVING INDUSTRIAL SUGAR USERS

OF FLO-SWEET Quality



Compare the melted granulated with the Flo-Sweet industrial sucrose, industrial invert, and total invert. Industrial types of Flo-Sweet actually show less color than the melted granulated. And up to now, granulated has been the accepted standard of purity!

In Flo-Sweet amber and golden sugars, the colors – and characteristic flavors – are deliberate and closely controlled. Note their clarity and freedom from haze.

The color of liquid sugar is, of course, only one indication of its quality. We welcome comparison of Flo-Sweet with any other sugar – liquid or granulated – on any basis whatsoever: color, taste, aroma, laboratory analysis . . . or the practical test of how it performs in your own food products. You will discover what many Flo-Sweet users have long known: that Flo-Sweet has established exacting new standards of liquid sugar quality.

For this is true sugar quality – You can see the difference.

& SUGARS, INC. YONKERS, NEW YORK

EXCLUSIVELY FROM YONKERS, ALLENTOWN, DETROIT, TOLEDO

MARKETING SIGNALS

Private Labels Beckon

Shall I allocate part of my pack to retailer-sponsored brand lines?

That's the question which even the biggest promoters of the more familiar household brand names are asking themselves. Behind this soul-searching are these factors: Difficulty for gaging potential consumer demand and gearing production to it, increased costs of promotion in enlarging share-of-market, and the greater percentage of shelf space allocated to retailer labels.

One straw in the wind is the disclosure by Dole Hawaiian Pineapple Co. that private label business "is of growing importance to the company." The firm plans to "aggressively expand" its private label business this year. Other outfits look upon this market as an outlet for surplus packs, when depressed prices make it almost impossible to recover promotion costs.

More Efficient Distribution Targeted

With manufacturers scrutinizing their own marketing channels for greater efficiency, warehouse operators have launched an extensive survey aimed at finding how their storage plants can help out. National Assn. of Refrigerated Warehouses' new research project explores how current trends in food distribution will affect warehouses, and what storage operators can do to gear their services to future needs of food manufacturers.

Some of the trends to be explored: Construction of private storage space by large retail food stores, tendency of packers to hold goods in own plants rather than store at in-transit points, and production of some items becoming less seasonal because of geographical diversification.

Battle of Brands Intensifies

As more labels fight for position on store shelves, it gets harder to increase your market-share. *Milwaukee Journal's* 1958 Consumer Analysis showed that 56 of the brands topping their categories in '57 held their lead this year, while seven were toppled from first place. However, of the 56 brands, 25—or almost half—were reported as being bought by a smaller percentage of families than last year. Primary reason for this was the greater number of brands.

Cultivate the Non-Buyers

Stronger efforts to expand sales to non-user groups help ward off recession effects, advises Ernest Dichter, president, Institute for Motivational Research. Some ways in which this can be done:

1. New age units. Very few products are specifically directed to senior citizens. Stretching your product's "age-appeal" widens its popularity-base. **2. Sex.** Switching packaging and promotion to the opposite sex taps new sales. Men do more of the family's food buying than previously, but, conversely, women handle more of the beer and liquor purchases than heretofore. **3. New social groups.** Americans are traveling abroad in increasing numbers each year. Thus, they're becoming more cosmopolitan in their food tastes, are more susceptible to unusual dishes. Italian food makers have shown how successfully this can be exploited.

Hot Weather Warms Up Drink Drives

With the onset of summer, beverage makers are sparking a number of stepped-up promotions aimed at quenching parched throats. Some examples:

Pan-American Coffee Bureau will have support from General Mills (cake mixes) and Carnation (evaporated milk) for its iced coffee drive. Reason: About one-third of all evaporated milk sold is used in coffee, and more cake is served with iced coffee than any other dessert.

Pepsi-Cola is replacing its familiar "that's a lot" jingle with one that has a "be sociable" theme. Aiming its program at the youth market, C & C Super Cola is trotting out two new cartoon scout characters for use on TV and related in-store aids. And Minute Maid is offering a plastic float premium with its Hi-C drinks.

BRIEFS

Grass-roots support is firming success chances of "September is Canned Foods Month" promotion. Limited at first to California groups, drive is now drawing support of eastern and midwestern organizations, as well as suppliers and national communication media.

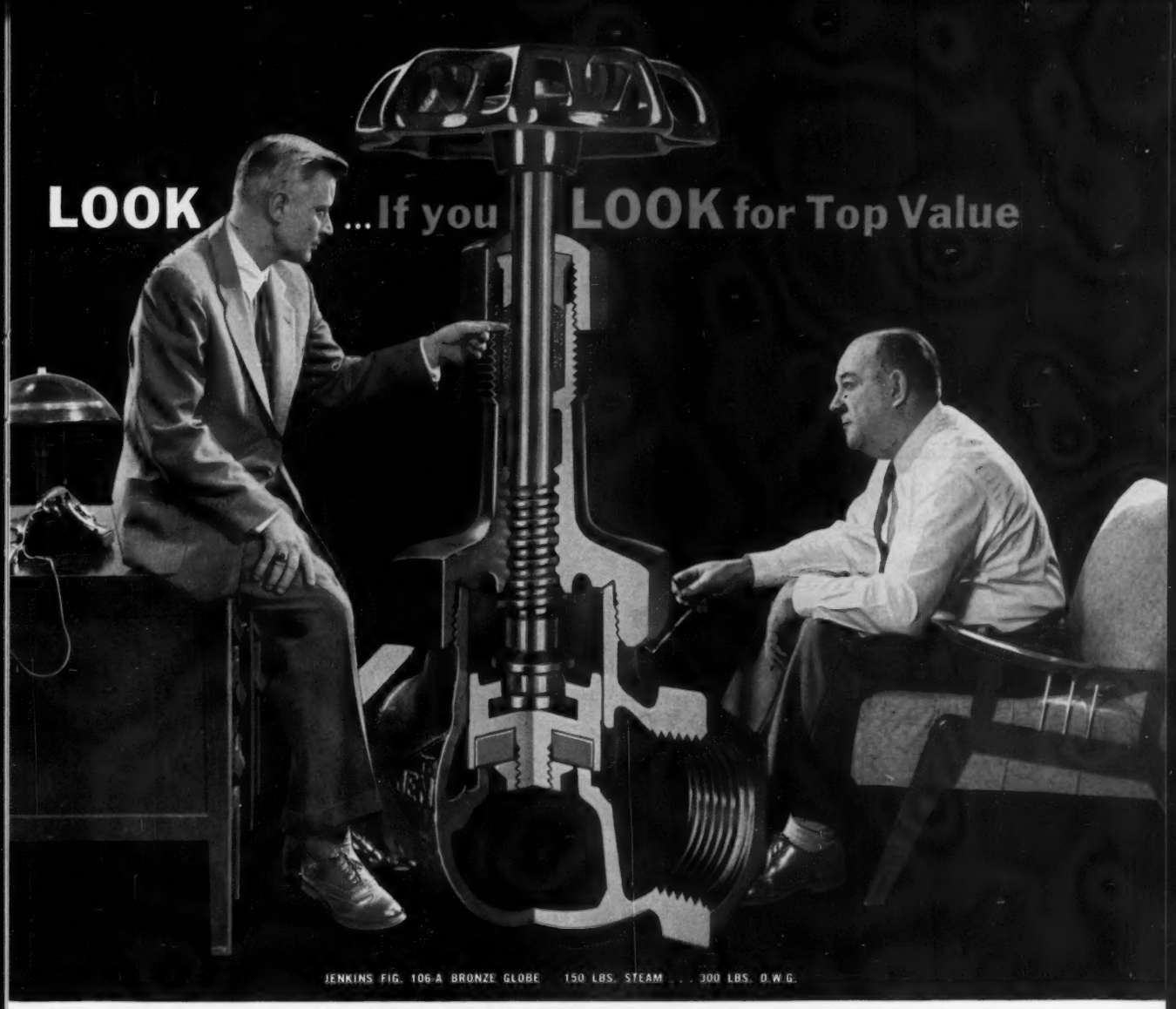
Big untapped market for barbecue sauce makers. While 59% of homemakers use the item in food preparation, less than 20% of this group rely on commercially-made product exclusively, says Home Makers Guild.

In-kitchen appeal of its new copper-colored coffee can will be keyed to $300,000 advertising program, reports Thomas J. Webb Coffee Co. Six million coupons will saturate Chicago area to help introduce the new tin.

Hungry department store shoppers are a new target for those who sell through food-vending machines. Macy's, New York, which has long had drink-dispensing units, is adding several more venders for sandwiches, pastry, ice cream, and candy—and a change-making machine.

Fewer consumers now complain about food advertising, says Better Business Bureau. BBB heard from 3,486 discontented consumers last year vs. 4,040 in '56.

Pleasure boat owners are new target of Seabrook Farms. Figuring that more than 400,000 pleasure craft have cooking facilities, company is aiming its boil-in-the-bag frozen entrees at boat-owning families.



in Disc Equipped Bronze Valves

LOOK at that Wheel — Tough malleable iron. Design unequalled for cool, sure grip.

LOOK at the Index Plate — Has Fig. No. etched in green background. Held by wheel nut which is secured by rolled-over spindle end.

LOOK at that Spindle — Made of high tensile bronze. See how much heavier it is . . . how many more deeply cut threads engage bonnet. And, the crowned head that reduces friction on disc holder. Sure, it costs more to make a spindle this way. But it reduces wear, preserves packing, means easier operation.

LOOK at the Packing Nut and Gland—Note the heavy and deep bronze hex. And, that bronze gland designed to compress packing toward spindle.

LOOK at that Packing Box — Its depth equals 1½ times spindle diameter. More packing space means less repacking. An asbestos, lubricated and graphited packing is used.

LOOK at that Bonnet — One-piece, screw-over design with big hex surfaces is easy to remove. Take an extra look at the bevel joint between bonnet and body, serving as an internal brace against the crushing effect of the bonnet assembly. Millions of Fig. 106-A in use for years prove this unique design licks distortion and springing.

LOOK at the Disc Holder — It's the Slip-on Stay-on type originated by Jenkins. Correct protective depth prevents flaking or cracking of disc.

LOOK at the Disc — Easily renewed without removing valve from line. Made of compositions to suit various services . . . and **made by Jenkins,** the only maker of both valves and discs.

LOOK at that Body — Just compare wall thickness of this high tensile bronze body with any other valve. The factor of safety is many times higher than rating requires. See the curved diaphragm to protect seat from distortion by pipe strain. Note that the raised seat is higher to permit more reseating operations . . . and wider, so it won't cut into disc. Pipe threads are full length and clean cut.

LOOK at this . . . for Throttling

—Just replace the standard disc nut with this Throttling Nut and a Fig. 106-A becomes well-suited to throttling service. This unique nut reduces the effects of wire drawing and its long legs restrict flow for accurate control. Many plants take advantage of this versatile valve to reduce valve and parts inventory.

THE FIRST renewable composition disc valve was a Jenkins Valve, originated nearly a century ago. Compare today's Fig. 106-A Bronze Globe with any other. See why so many valve users agree that a *Jenkins* is still the FIRST for top value. For descriptive folder No. 189-B on the full line of Jenkins Bronze Globe, Angle and Check Valves write to Jenkins Bros., 100 Park Avenue, New York 17.

SOLD THROUGH LEADING DISTRIBUTORS EVERYWHERE

JENKINS
LOOK FOR THE JENKINS DIAMOND
VALVES
JENKINS SINCE 1864
Jenkins Bros.

DESIGN SIMPLICITY gives new label stronger impact, compared with . . .

Double-Duty Label

S and W shows how to get maximum mileage from design changeover. Animated cups "dance off" coffee can in TV skit to set up sale. Then in store "vapor trails" dramatize product's "buy-me" appeal to clinch it

CAN A long-established label that has demonstrated its pulling power be radically overhauled without losing its grip on customer loyalty?

Yes—when (1) it's preceded by the kind of sharp research S and W Fine Foods, San Francisco, put into the redesign of its coffee can label, and (2) promoted by the kind of smart merchandising this firm used to get maximum impact.

The complex dynamics of today's self-service supermarkets constantly test a label's effectiveness. Because of the hard selling job it must do in these stores, a package design must be under increasing reappraisal.

Here are factors to keep in mind when you eagle-eye your label:

C. R. HAVIGHORST

Senior Associate Editor, "Food Engineering"

It's possible for customers to become "conditioned" to an old label that's been unchanged for years. And with the current deluge of new products—many with strikingly attractive labels and packages—shelf competition makes it easier for the shopper to "pass by" the old label.

Consider, too, the price psychology that may persuade a customer to buy a strange brand that's a penny or two cheaper. Unless the more familiar label effectively reminds the consumer of the greater desirability of your product, sales start to flatten out.

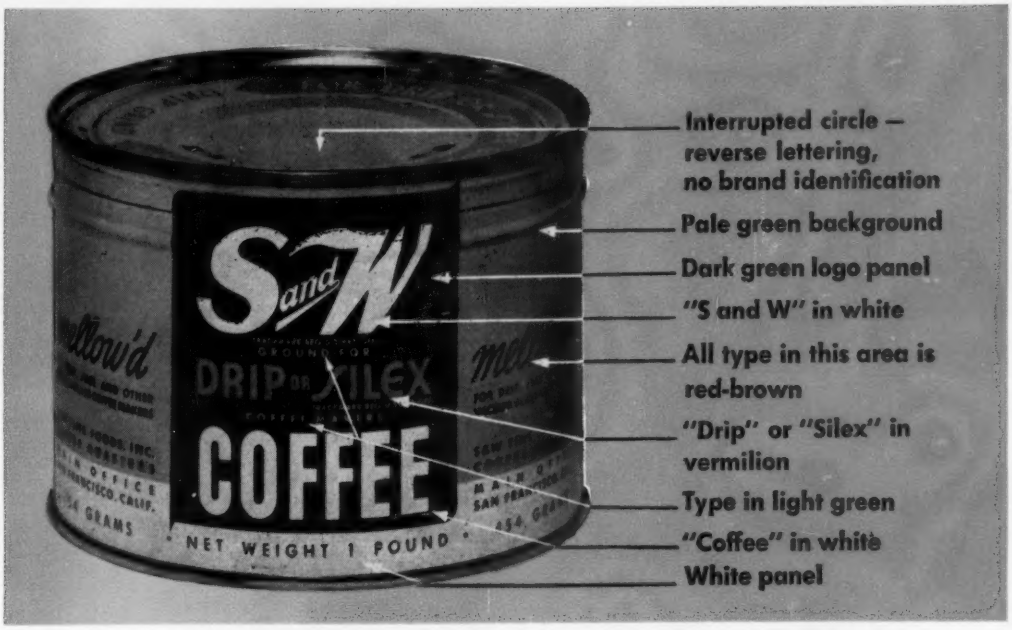
Aside from shelf-competition, a newly designed or modernized label provides an additional new theme for product advertising as well as a "new dress" for the item. And if some improvement has been made in the product, the new dress can be used to particularly emphasize it.

It was with this in mind that S and W started researching the effectiveness of the coffee label they had been using for years. Long recognized as a quality packer, S and W had recently perfected a new blend of coffee. Before putting it on the market, the company wanted to find out, if a new label would (1) improve the S and W brand identification, and (2) aid the new coffee's introduction and sale.

Results of this study indicated that a design overhaul would achieve these aims—and a great deal more.

What They Learned

Among other startling revelations, the study disclosed two definitely needed changes in the original label: (1) The tightly packed, descriptive


Interrupted circle — reverse lettering, no brand identification
Pale green background
Dark green logo panel
"S and W" in white
All type in this area is red-brown
"Drip" or "Silex" in vermilion
Type in light green
"Coffee" in white
White panel
S and W
DRIP OR SILEX
COFFEE
NET WEIGHT 1 POUND

. . . **CLUTTERED COPY on old coffee can that weakened buying appeal.**

Pre-Sells and Re-Sells

copy seemed to crowd and obstruct easy visibility of the brand name, and (2) a better selection of colors, that more appropriately connoted coffee, could be made.

When first designed, the former label was quite modern. However, the trend to simplicity, the use of symbolistic devices (for easy product identification and appetite appeal), and greater prominence for brand and product name (usually in uncluttered space) tended to outdate it.

Aware of this, the company wanted a label for its new coffee that would act as a miniature billboard on the retailer's shelf. Called for was a design that would be "glance-identified" amidst the kaleidoscope of other brands.

Two essential elements are required to achieve this—an easily discernible brand name and a forceful, appetite-appealing delineation of the product. All other copy and illustrations can be subordinated to these important elements.

Color, too, has decided significance in label design. Subtly suggesting appetizing sensations, it is essential to the illustration of foods. An expert designer skillfully uses color to emphasize certain elements, subdue others and, on the whole, produce a label that stands apart from on-shelf competitors.

After completing the label study and deciding a change would be beneficial, the company chose the San Francisco industrial designer, Walter Landor. He immediately began an additional *new label* research, in cooperation with the company's advertising manager and agency (Honig, Cooper & Miner) to determine the most effective design that could be constructed around the well-known S and W trademark.

As with the company's other products, the consumer's familiarity with the old coffee can was closely related to the easily identified "S and W" logo. It has been widely advertised over a period of years and is accepted as a symbol of quality. This was confirmed by Landor's research.

To achieve the company's aim of a revolutionary, new design, Landor discarded all but this logo and began afresh.

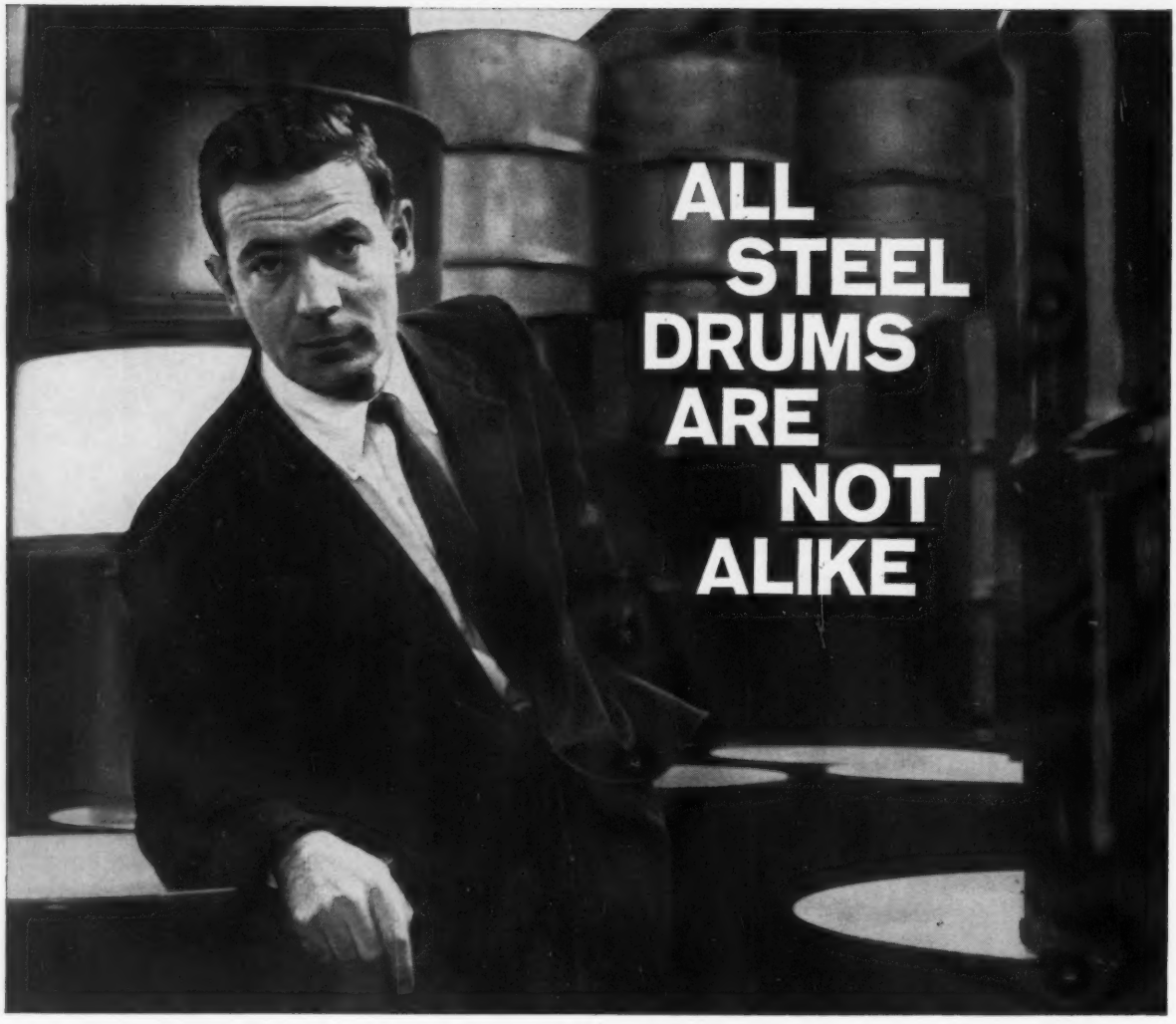
First, he studied the problem posed by product illustration. Because, while coffee is aromatic, flavorful, and stimulating, it's a difficult subject to reproduce in an appetizing and colorful illustration. Unlike such other beverages as fruit juices, coffee is normally served in opaque china cups, hence does not easily lend itself to photography or painted illustration.

Objective of both the company and Landor was a package that actually conveyed the feeling—taste and aroma—of this new blend of coffee. Also visualized was a design so different from other coffee labels that it would have an individuality of its own.

Label Critique

Let's disassemble the elements of the new label to see the logical approach Landor used to achieve the final design:

Easy brand identification was of first importance, so "S and W" was set in a white "spotlight," edged in gold. Reflection from the shiny tin



Now, from U. S. Steel, you get maximum product protection plus two important purchasing advantages—at no extra cost

Chemically cleaned, then coated with extra zinc phosphate – every rust-inhibited U. S. Steel drum gives you maximum product protection.

But that's not all.

With every U. S. Steel drum *and* every U. S. Steel pail, you automatically get two extra purchasing advantages that can help you save time and money.

1. Full, complete line. U. S. Steel offers today's widest selection of steel shipping containers. From 2½-gallon pails through 57-gallon drums – *plus* a complete line of stainless-steel containers. This wider line allows you to fill all your needs at one time, in one place, with absolute confidence.

USS IS A REGISTERED TRADEMARK.

2. Punctual deliveries. U. S. Steel's seven convenient plants assure you of a smooth, even flow of containers—by rail, or in a special fleet of trucks. Our kind of service helps reduce both inventory and production problems. Your normal needs are filled without delay, rush orders get there quicker, too.

Maximum protection, simplified purchasing, punctual deliveries—U. S. Steel gives you all these extras at no extra cost. Why don't you talk over your steel shipping container requirements with the man from U. S. Steel?

Factories in: Los Angeles, Calif. · Alameda, Calif. · Port Arthur, Texas · Chicago, Ill. · New Orleans, La. · Sharon, Pa. · Camden, N. J.

United States Steel Products Division

USS

PROOF OF U. S. STEEL PROTECTION! Both these 55-gallon drums were weathered for 12 months. Rust appeared on the ordinary drum the first week. U. S. Steel rust-inhibited drum—coated with zinc phosphate—shows no trace of rust whatever.

For more data, circle 254 on Reader Service Card

shows through the transparent, emerald green ink used for "S and the W," giving the lettering an attractive luminosity. Set in a field of white, the brilliant green contrasts sharply—but does not vibrate—with the can's overall red background.

The crown, at the top of the spotlight, suggests regal quality. And since the kind of grind is important to consumers, this information is placed in the crown. To make doubly sure that the several different grinds would be quickly noticed by a consumer, the crown is also outlined in gold, making it a part of the spotlight and logo but different from them in color. A round panel on the can top repeats the logo and kind of grind.

The word "coffee" and the "and" between the letters "S" and "W" are in a rich, red-brown color, reminiscent of the product's in-cup appearance. And to further connote this familiarity, the lettering used in "coffee" is in easily recognizable, traditional style.

Landor's next step was to try and pictorialize the product. Although it would be impractical to use an illustration of a cup filled with coffee, per se, a number of studies disclosed that the product's appetite appeal is associated with its warmth, aroma, flavor, and cheerfulness.

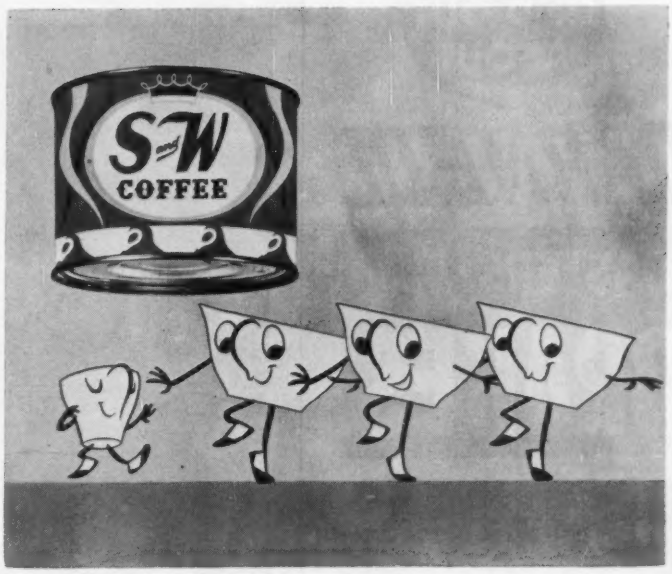
Since the beverage could not be satisfactorily pictorialized, Landor developed symbolic designs which strongly suggested the four appetite appeals. Here's how he did it:

Against a background of warm, bright red color, he designed a series of white cups around the bottom periphery of the can. Symbolically rising from each cup are two simulated "vapor trails" reminiscent of the aroma of a cup of hot coffee. Also, they give the impression of festive party streamers. When this artistic symbolism is associated with the word "coffee," the product is readily identified by word as well as by a pleasant and appetizing impression.

For TV—Symbols Animated

Aside from the importance given the spotlighted trade name, the can's background also was designed with a preconceived shelf and mass-display effect in mind. When the cans are aligned properly, one atop another, the vapor trails seem to join, giving the impression of a block display.

In order to launch this new blend of coffee along with the new label, the company had initially included, in various media, the use of 10-sec. TV station-identification spots. Subsequently, this was changed to a place in the company's regular TV program (including "The Honeymooners" series) and given 45 sec. time.



ADVERTISING VALUE of good package design is demonstrated by company's TV commercials. Animated cups dance off can, sing praises of firm's new blend. Demitasse vainly tries to get into act, finally succeeds in getting in last word after bigger cups have left screen.

The company's advertising department wanted to avoid the commonplace announcement wherein a narrator describes the virtues of a new product, then identifies the new package. While digging deeply into all the new design's elements for merchandising leads, the ad man discovered a singularly valuable, and unplanned, use of the cups. Result: An interesting animated short wedded closely to the label. In sequence, here it is:

First, the new can appears on the screen. From the bottom edge of the can, three cups peel-off and become animated cups, with faces, arms, and legs. To music, composed especially for this skit, the cups begin to dance and sing the praises of the new coffee blend.

Before they finish, a small demitasse cup tries to get into the act—but is rudely pushed aside by the three bigger ones. When the three finish their act and start to retire, the demitasse, apparently quite irritated and determined to play a part in the skit, shouts in a loud and raucous voice "EESS and DOUBLE U."

The three cups and demitasse then disappear. But the demitasse quickly reappears, at the side of the can. This time he whispers "Eess and Double U."

Completely sold on this novel animated skit, the company developed it to its maximum interest and sales effectiveness. A singing trio was selected for the three cups. And for the demitasse, the famous Mel Blanc, "man of many voices," was engaged.

Calculated to startle—even awaken—TV viewers, Blanc's finale scream is a distinct contrast to the trio's sweetly sung jingle. And as another sharp contrast in sounds (also because a whispered conversation implies something secret) Blanc then murmurs the final words of the skit.

The wrap-up, following this animated short, is done by a narrator who appears on the screen. He further describes the new product's qualities and points-up the new label.

This theme is also used in other printed advertising media and on the company's trucks—their traveling billboards.

Here, then, is a new label that strongly connotes the new coffee's quality characteristics and which also provides the major theme for all media used for launching and advertising this new product and package.

—*End*

FIND OUT ABOUT

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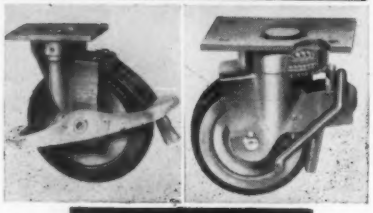
CASTERS WITH BRAKES



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Food Processing Plants are turning to Darnell Brake Casters for ease of equipment operation and lasting economies. Darnell distributors provide them with one of America's most complete lines.

Available in hundreds of models —select the types best suited to your particular requirements. Various types of treads (including Neoprene and Phenolic Wheels) and a variety of stems, top-plates and other fittings for ease of application to all movable food processing equipment.

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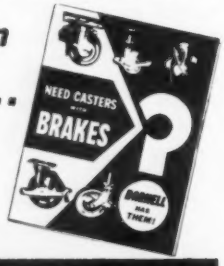

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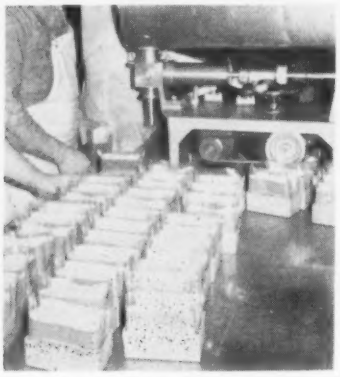
PREPARING POUCH for chili filling: Mandrel opens bag, bends back its ears, then nests it in a reusable cardboard mold.

BAG-TYPE PACKAGE is held in place by cardboard mold while chili meat enters it from filler. Each mold can be used 10 to 12 times, doesn't have to be cleaned after each use.



'Twist' Ups Chili Sales 20%

Package appeal zooms when brick-type product is cardboard-molded in plastic bag . . . Switch from metal forms saves work and costs

HIGHER SALES and lower costs! Those are the dual targets you must always eye if you're to stay ahead of the competition. And often just a little packaging ingenuity brings them within reach.

Take Seitz Packing, St. Joseph, Mo., for instance. By eliminating stainless steel pan molds and switching to a duplex cellophane pouch for its brick chili, this firm was able to knock off about 2¢/lb. in packaging and labor costs. Furthermore, it racked up a 20% volume increase as a result of improved package appeal.

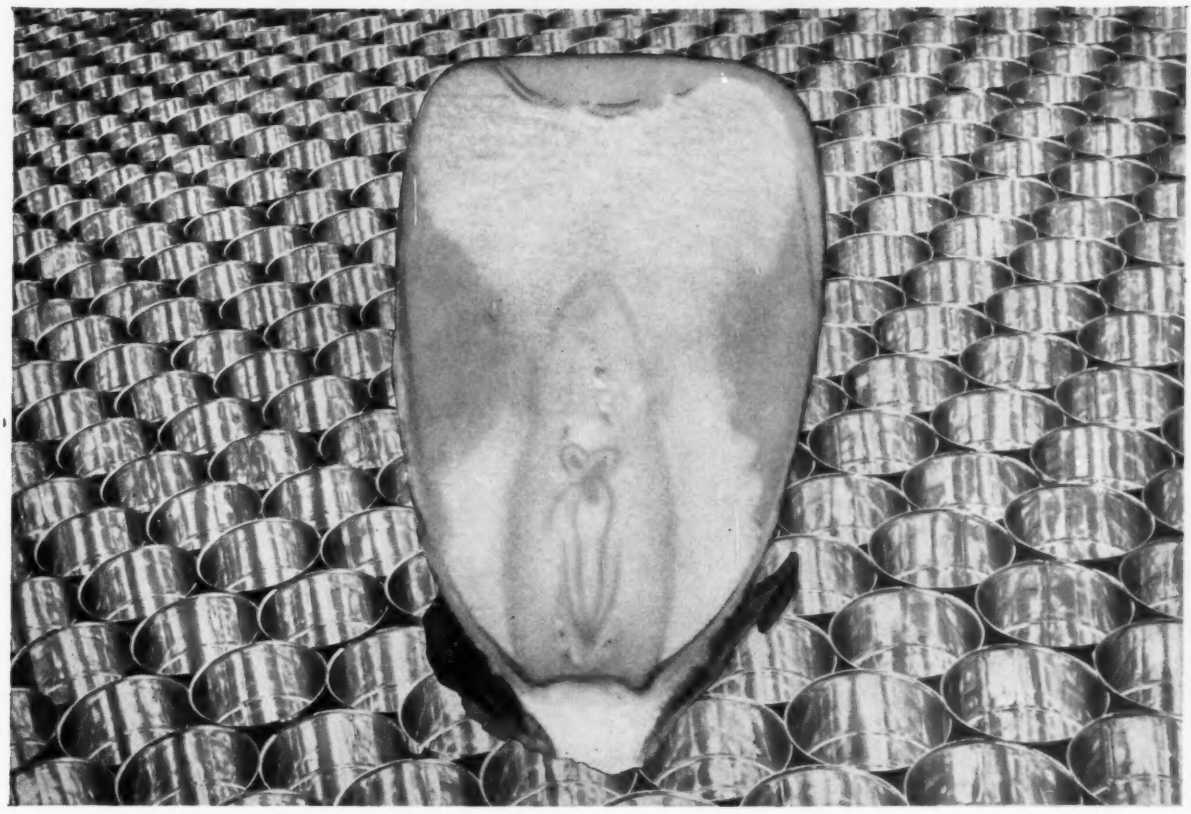
Under the old system, cooked and seasoned chili meat was placed in stainless steel molds, which were then moved to cooler for overnight chilling. Next day, chili was "knocked" out of the molds and overwrapped in cellophane. Problem here was that molds had to be washed each day–adding to costs–and meat sometimes would break into pieces when removed from the mold.

Solution was a cardboard mold in which an end-open duplex pouch (Milprint) is inserted prior to filling. Bags are filled with meat, then placed in cooler overnight. The following morning, open ends of the pouch are heat sealed.

True, the cardboard units cost about 5¢ apiece. But, says Manager W. O. K. Dillinder, they can be used 10 to 12 times, thus cutting per-package cost to a small fraction. The only new equipment needed is a mandrel that properly squares the pouch in the mold.

Elimination of the washing step and the cellophane overwrap used previously has shaved labor costs 2¢/lb., Dillinder says. And, he adds, the neater looking package has won consumer approval to the tune of a 20% jump in sales. —*End*

SPECIAL STARCHES



for Special Effects in Canned Foods

Special Starches from National simply stabilize or thicken. Nothing else! As stabilizers they never cloud color, never mask flavor. As thickeners they maintain viscosity characteristics even after extended storage. The result is these six special effects:

- Full Natural Color
- Full Flavor
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- Breakdown Resistance

These unusual starches are refined from corn, amioca or tapioca. They improve canned foods that range from soup to dessert. We'd like to show you how. Just write, including a description of your product or problem.

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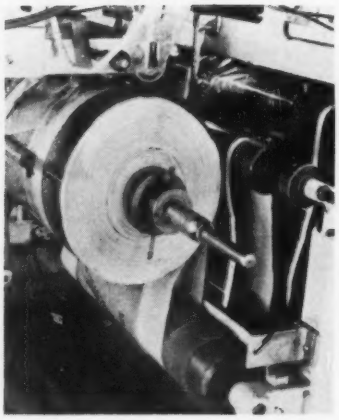
For more data, circle 256 on Reader Service Card

TOUCH APPEAL gets big boost with new poly wrap that feels softer, gives bread "fresher" look.



PRINTED ROLL of polyethylene film with wax coated sidewalls unwinds into wrapping machine as bread moves over from slicer.

High-Speed Overwrapping With

Elimination of film's machine-handling problems opens way

TWO-PRONGED BREAKTHROUGH in machine-application of polyethylene overwraps for food products promises a new era in low-cost, automatic protective packaging. Bakers already are benefitting from this forward step, which in time can extend to other industry branches where this versatile film lends itself.

Immediate benefits of this significant development, which provides high-speed overwrapping of bread, are:

1. **Low cost**—for polyethylene, currently 8-9¢/lb. cheaper than MSAT cellophane, is one of the lowest priced transparent packaging materials available today.

2. **Superior product protection**—which means longer shelf-life (up to two or three days) for bread, hence fewer losses through "stale returns."

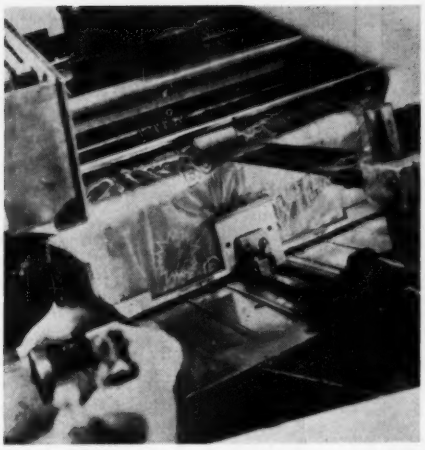
3. **Improved merchandising appeal**—through the film's "softer" feel, high-gloss clarity, and transparency.

4. **Machinability**—via special attachments (to standard bread wrapping equipment) that overcome previous roadblocks related to the film's limpness, also sealing difficulties.

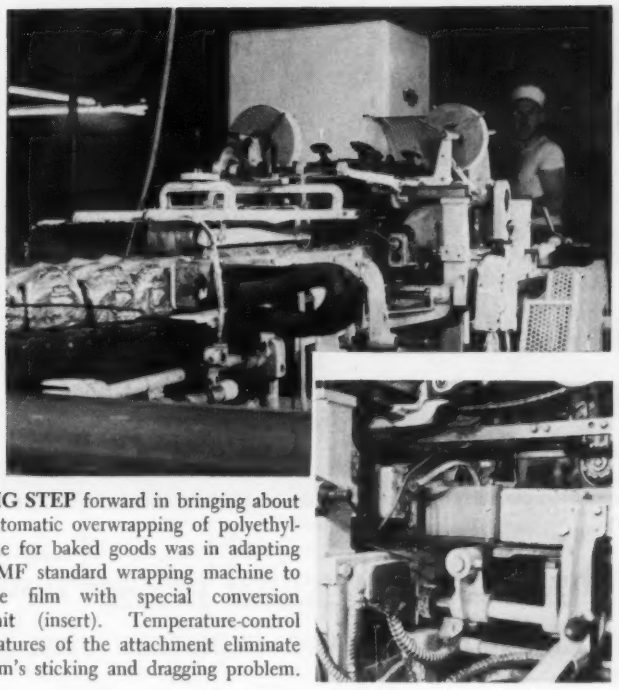
Spearheading the breakthrough are Milprint (working with Bakelite and Visking divisions of Union Carbide) and Western Waxide (teaming up with Spencer Chemical). The two packaging outfits licked the problem with different approaches. Milprint's 1.5-mil "Everfresh" wrap has wax coated sidewalls which facilitate machine handling, while 1.0-mil "Crown-Seal" wrap of Western Waxide is made from medium density (0.935) resin—"Poly-Eth Hi-D"—which has a greater stiffness than low density poly.

New Milprint wrapping material was adopted for automatic handling by polyethylene/wax coated paper

Creating The Package



POLYETHYLENE FILM is cut and folded around bread at the rate of 33-60 loaves/min. Auxiliary unit heat-seals bottom folds.



BIG STEP forward in bringing about automatic overwrapping of polyethylene for baked goods was in adapting AMF standard wrapping machine to the film with special conversion unit (insert). Temperature-control features of the attachment eliminate film's sticking and dragging problem.

Polyethylene Makes Debut

for packaging with better protection-appeal at lower cost

ends, heat sealed to the film. The paper collars, running down the sides of the film, provide a quick and easy seal in wrapping operations and eliminate the need for special end seals.

A small auxiliary heating mechanism, attached to AMF standard bread wrapper, heat seals the bottom folds and at the same time protects the film with Teflon-coated belting. Cost of the first installation is $2,000, and $1,000 for each additional unit placed in the same plant.

Milprint says wrapping speeds average 33 loaves/min. and have gone as high as 66/min. in some operations. The special attachment does not prevent the baker from using cellophane and/or wax paper on the same machine—a mere flick of the switch turns off the heating mechanism.

Several bakers report the polyethylene overwrap has already slashed costs "significantly" by reducing the returns of stale bread.

Milprint says the film—which extends shelf life—is being adopted by an average of three bakers a week.

Western Waxide's film, with a softening point of 240F, is not limited by the low melting level that is characteristic of conventional polyethylene. Sealing range, in fact, is 25 to 35 deg. higher than that of the low density film. Tensile strength is higher, too, and tear strength, second only to conventional poly, is still better than that of most flexible packaging films.

The new wraps give bread longer shelf life—at least two or three days more—with a permeability protection that is several times that of the low density films. And grease-proofness is three to four times greater. Machinability is enhanced by the increased stiffness that is characteristic of higher density polyethylenes.

To make the film suitable for high-speed overwrapping, Western Waxide: (1) Developed specially coated end seals and outsert bands for better sealing and easier opening, and (2) devised a conversion attachment for AMF standard wrappers.

Made of specially coated wax paper, the bands act as a printed label to identify the bread, give structural support to the light film, and provide an extra-tight bottom seal. The end labels, also coated, prevent loosened wraps on store shelves—thus providing neater displays—and simplify opening for the housewife—when she pulls on the

Why United's patented process results in corkboard of lower moisture absorption

Cork in its natural state is well known and highly regarded for its excellent insulating and moisture resistant characteristics. However, by an exclusive blocked-baked patented process that uses internal and external heat to release the natural resins in the cork, United BB Corkboard becomes substantially more moisture resistant.

Further, United Corkboard is all cork . . . with no filler added. It's flexible too . . . fits tight . . . stays tight . . . installs easier and stays on the job! Most important, there is adequate flexibility to conform to minor wall irregularities and absorbs stresses.

The next time you have a need for low temperature insulation investigate the unique combination of benefits only "patented process" United Corkboard can provide.

Write today for specifications and helpful installation data. No obligation.

UNITED BB CORKBOARD

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Since 1907

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ENGINEERING AND INSTALLATION SERVICE — to meet your individual requirement . . . insure the most effective use and provide proper installation, United maintains fifteen branches throughout the country, staffed with experienced engineers and installation crews. For the one nearest you simply write to our Kearny address.

label, film is opened without any tear.

The conversion unit (costing about $1,500) brings the temperature under control for sealing, keeps the polyethylene from dragging or sticking (because the film is stiff enough to be fed over the machine and be cut by the knives), and ensures a proper fold. End-seals are tack-sealed, not welded, for simpler overwrapping.

In its initial installation at Fluhrer Baking, Eureka, Calif., the modified AMF machine has wrapped bread loaves at the rate of 45-60/min., and has even achieved 70/min. rates. For greater flexibility, attachment is such that the baker can switch over to cellophane or wax paper without making any adjustments to the machine.

One impressive feature of the new wrap is that it costs 25-35% cheaper than cellophane. Cost of the entire "kit"—including film, bands, and end labels—is still 11-20% cheaper than cellophane.

To get consumer reaction, Western Waxide sampled 150 households as well as a number of store shoppers. Overwhelming consensus: Polyethylene wrapped bread, compared to cellophane, was softer and fresher—indicating the film's "touch" appeal—easier to open and reclose, and kept fresher longer in the home.

One factor bringing automatic overwrapping of polyethylene for the food industry nearer is the stepped up activity of machinery manufacturers.

A Battle Creek Packaging Machines' unit that employs a new feed-fold system has achieved 60/min. speeds. Packaging Machinery converted one of its units by addition of special Teflon plastic-coated folding line, a belt discharge with floating heat-sealing and cooling units, and glass fiber discharge belts that carry packages past the heating and cooling plates. Speeds of 80/min. are cited for the unit.

A conversion unit on a Wrap-King model permits interchange of heating elements in minutes. Company reports speeds of 27-45/min. And the Campbell wrapper of FMC Packaging Machinery Division has already been used for wrapping tube-shape pie crusts in polyethylene. After film is shaped into a tube in an unside down former, side and bottom belts convey tubed product beneath a hot wire sealer and through a top and bottom chain device that heat-seals the end. Speeds range from 40-60/min. —*End*

MonoSodium Glutamate, when used in the proper quantity, is the key to over-all control of the flavor variables involved in food processing.

Catching up with your competition, maintaining your position in today's competitive market, or leading the field, may depend on your decision to use MSG.

MSG blends, strengthens and preserves the natural fresh flavors of your product. It creates a uniformity of taste, a flavor identity which is the first step in establishing lasting consumer brand preference.

Great Western's MSG is available in bulk 100 lb. and 25 lb. drums.

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99+% Pure Mono Sodium Glutamate Crystals

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Denver, Colorado

For more data, circle 258 on Reader Service Card

COMPACT DESKS and new filing system, located in stores-control department at Kellogg Co., are designed to insure accurate, non-fatiguing, desk-level posting.

'Paperwork' Gets a Real Trimming

Up to your neck keeping tab on maintenance supplies? If so, there are pertinent tips for you in the speedy technique used by Kellogg to take workload off stock room, stores control, and purchasing

PROCESSING a wide variety of top quality breakfast cereals requires around-the-clock maintenance to keep things running ship-shape.

So Kellogg Co., Battle Creek, Mich., gears its repairs to a schedule of preventive maintenance, thus they don't become costly emergency jobs.

But companies traveling this road must still keep an eye out for those signs relative to supplies on hand—"Too Much" or "Too Little"—that mark detours from an efficient maintenance program. Since materials have become increasingly expensive, it's costly to have too much on hand and, production-wise, fatal to carry too little.

Without handy supplies, a maintenance system won't stand up to hold the cost line. But all of Kellogg's maintenance craftsmen—in 96 productive and non-productive departments—know they can rely on the maintenance stockroom to supply them with materials when needed.

This dependable service has been made possible—with a minimum amount of pencil-pushing—by a streamlined, two-card (master inventory and traveling requisition) Visi-Record file system (Visirecord, Inc., Copiague, N. Y.) for keeping tab on maintenance stock.

The company has gained the following seven benefits from this new visible, ledgerless system:

1. Method of showing supplies on hand, ordered, received, and issued has been greatly speeded. Clerk merely flicks back proper file panel and scans row of master stock cards to spot, at a glance, the proper card. On it, the balances and other data are easily visible.

A spot-color "card out" signal—exposed when second automatic requisition card (behind master card) is out-of-file and in hands of purchasing department — immediately tips off the clerk when item is on order.

2. Processing of requisitions and issuing of purchase orders has been accelerated at least 33%. This results from combining vendor, commodity description, and purchase history records on individual, permanent requisition cards designed by the general purchasing agent, N. F. Rabe. They eliminate need for writing requisition slips and duplicate follow-up procedures. Necessary information—date and quantity—posted on these cards by stores control clerks abolishes former transcription errors.

3. It's cut paperwork to the bone. Prior to adopting Visi-Record, two separate, but related, records were kept.

One was made up of stock room-maintained, conventional vertical card files (about 28,000) of supplies in and out of stock.

The other, a "visible book" record kept by stores control department, comprised 36 massive loose-leaf ledgers, with sheets (about 750 per book) filed in shingle or overlapping sequence.

Converting second set of records to Visi two-card system for present handling of about 34,000 items, (sometimes 42,000), abolished duplication of stock room files.

4. Control of stock balances is simplified by finger-tip indication of activity of each item, and exposed balance of master cards, thereby significantly reducing inventory. (Kellogg's annual supplies' inventory runs around $1 million.) As continuous physical inventories are made, stock-check figure is red-ink posted in visible balance column. This way, slow-moving items are flagged whenever there are few entries between red figures.

Moreover, it's no longer necessary for stores control to turn over the visible loose-leaf books to the statistical department to figure out the annual inventory volume.

5. Clerical time has been substantially reduced, in stores control and purchasing departments. Four girls (and one part time), instead of the former five, now control stores records, examine stock levels and pull requisitions for purchase.

Before, supervisor handled a lot of detailed information in checking requisitions, stock balances, etc. Relieved of much of this detail, he now devotes more time to efficient control of stock levels and to reducing inventory capital.

Typing of purchase orders has been slashed one-third. Each requisition card contains 16 entries, such as vendors, price, routing, terms, etc., pertinent to purchasing. This information appears in the same sequence on requisition and purchase order forms to eliminate errors and shifting of typewriter platen when writing up orders.

Work load on the five purchasing department buyers has been considerably lightened. They can now prepare orders in approximately one-third the time it formerly took. Permanent requisition cards, as stated, carry all necessary information for buyers who no longer must maintain histories, nor refer as often to suppliers' catalogs.

6. Purchasing can do a better job of maintaining good will among its suppliers through more uniform distribution of orders. Reason is that traveling requisition cards show, at a glance, frequencies and quantities of previous purchases.

7. Working conditions are immeasurably improved since filing now involves a simple "flick of the finger." Clerks' movements are minimized to reduce fatigue and lost time. Girls develop a sense of responsibility and pride in their work, while providing more and better service.

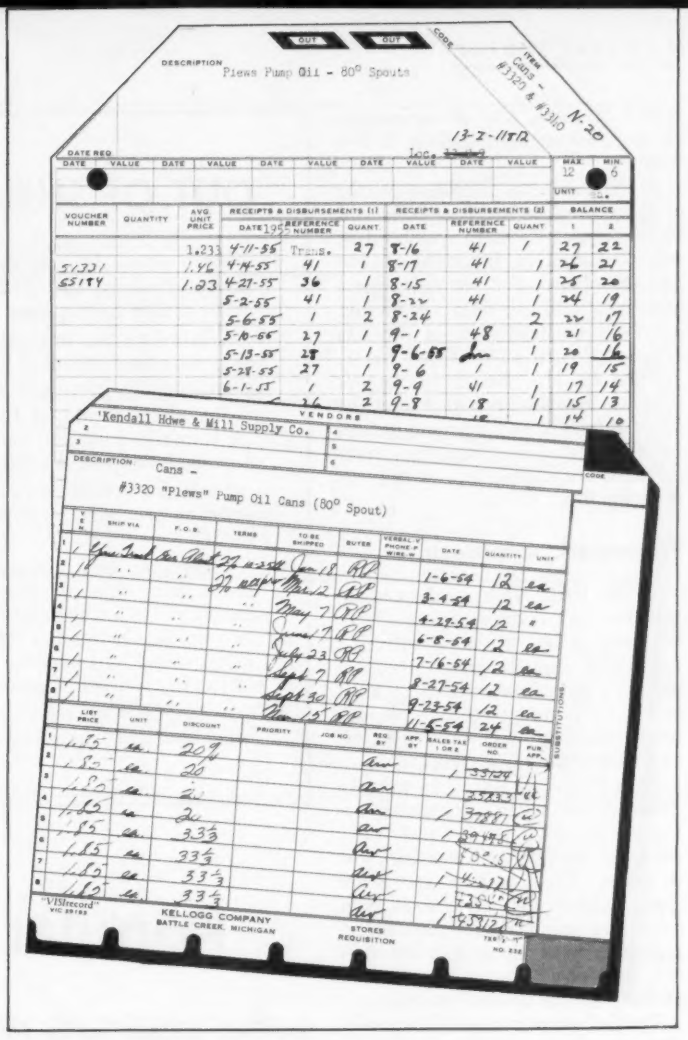
Keys to new system are five compact work centers. These are self-contained Visi-Record desks of the double-pedestal type containing new forms and filing. Desks also are equipped with pull-out utility posting boards for working two drawer files and inter-departmental phone.

Open tub and drawer housing units have replaced the old ledgers. One behind the other in these units are panels of visible vertical cards—master (7x8 in.) and requisition (6½x 7)—for each listed item.

Cards stand in overlapping rows, except for three visible margins for indexing and control. Notches (6) at bottom of cards straddle spacer rods that hold cards uniformly offset to insure visibility.

About 1,600 two-card sets are filed in a single tub or drawer, and each is within easy reach of a seated clerk. Each tub contains 26 aluminum dividers (with Tenite indexing channels), and in between each are five intermediate dividers separating individual banks of 16 card sets. Identifying information—item, balance on hand, maximum and minimum amounts—is visible at top and side of each card.

Each clerk, comfortably stationed at a desk, is assigned a category of suppliers (about 7,500), and keeps a



MASTER INVENTORY CARD (top) carries necessary information on receipts and disbursements. Right-hand margin shows item, balance, and maximum-minimum amounts directly when clerk opens file. Physical inventories are posted in red ink in the visible balance column. Entries here indicate this item is a fast mover. Automatic requisition cards (above), filed behind each master card, eliminates writing up requisitions. This permanent card travels to and from stores control and purchasing departments, and simplifies buyers' work. It's also designed to speed preparation of purchase orders, since items on card and purchase orders are in sequence.

record of them, also phone-handles all inquiries—without walking to and from files.

Filing has been simplified by the category breakdown of supplies and code-assigning them to specific desk tubs and drawers, indicated as cabinet numbers. For example, gears and sprockets are filed in cabinet 1-A, and finished parts in cabinets 1-A, 1-B, 2-A, and 2-B of desk No. 1.

Filed in desk No. 2 are factory supplies in cabinet 3-A, millwright supplies in 3-B, and pipe and fittings in 4-A and 4-B. Similarly, other supplies are code-listed in the remaining three desks.

Paperwork Approach

It all starts with workers from code-numbered departments (1 to 96) writing out a simple materials requisition slip, on which they list item and quantity needed. Slips then go from stock room to stores control, where they are sorted by category and then relayed to clerks.

Next step is for the clerks to make disbursement entries on master inventory control cards and carry stock-balance figures to extreme right of forms. Thus, balance figures are always visible for comparison with minimum and maximum figures on top of each card. (Code numbers are employed, where possible, to abolish writing of descriptions.)

Cost department's statistical section now gets requisition slips for extending and totaling, so that department receiving materials from stock room is charged for them.

As for handling requisition cards, this has also been simplified. At end of each posting run, stores clerks scan entire desk file in a few minutes for items likely to be short in supply and pull out those cards below the review point.

Supervisor then reviews these cards before they are relayed to purchasing. Since they contain all salient information, as well as past purchasing history, work load on buyers is reduced to merely designating vendor and price.

When items are ordered, purchasing posts complete information on requisition cards, then returns them to stores control for filing.

To keep records up to date, amounts of materials are posted by clerks onto master cards as they are received, and the balance is carried over to the marginal column. This way, master cards now contain a complete record of amounts received and disbursed. —*End*

OUT OF SHELLS AND INTO CANS➔

From Biloxi luggers, shell oysters are unloaded into a dock-side hopper supplying an inclined rubber belt conveyor. This belt feeds a rotary washer having inner water jets.

Washed oysters proceed along a screen-type inspection belt, then drop into track-mounted carts of spaced metal slabs that insure efficient steaming. Each cart handles about 5 bbl.—enough for 75-90 cans.

Steaming 6-7 min. at 15 psi. opens the oysters for shucking. Carts are then rolled out and dumped (Yale & Towne 1-ton hoist) into two floor-level hoppers. Inclined rubber-belts convey them to "shuckers."

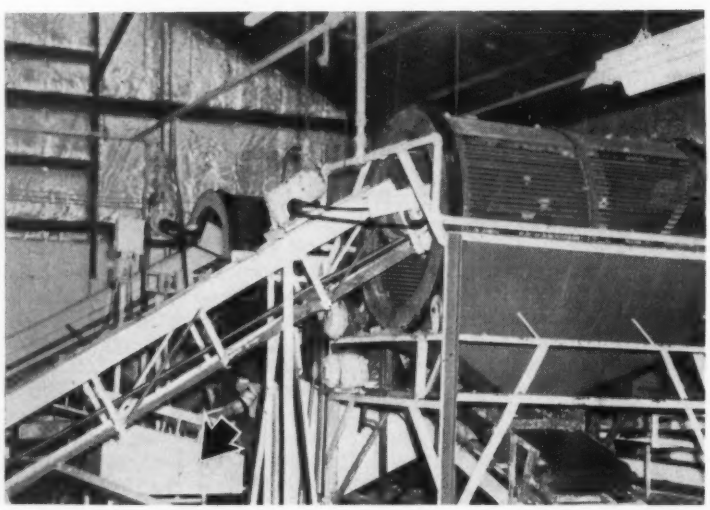
Each shucker (Blue Channel Corp.) is a rotating reel with inner water sprays. Here, oysters are washed as they are separated from shells.

Meats drop onto wire-mesh belt that discharges to a vat of saturated brine. Here they are float-separated from small pieces of shell and transferred to a wire-mesh belt for inspection as they are scaled (35-lb.) into stainless perforated trays. These are carted to the canning department, where girls hand-fill them in regular-pack cans (4½, 4¾, and 6½ oz.) or insert them in cans set up to take the oyster-stew pack.

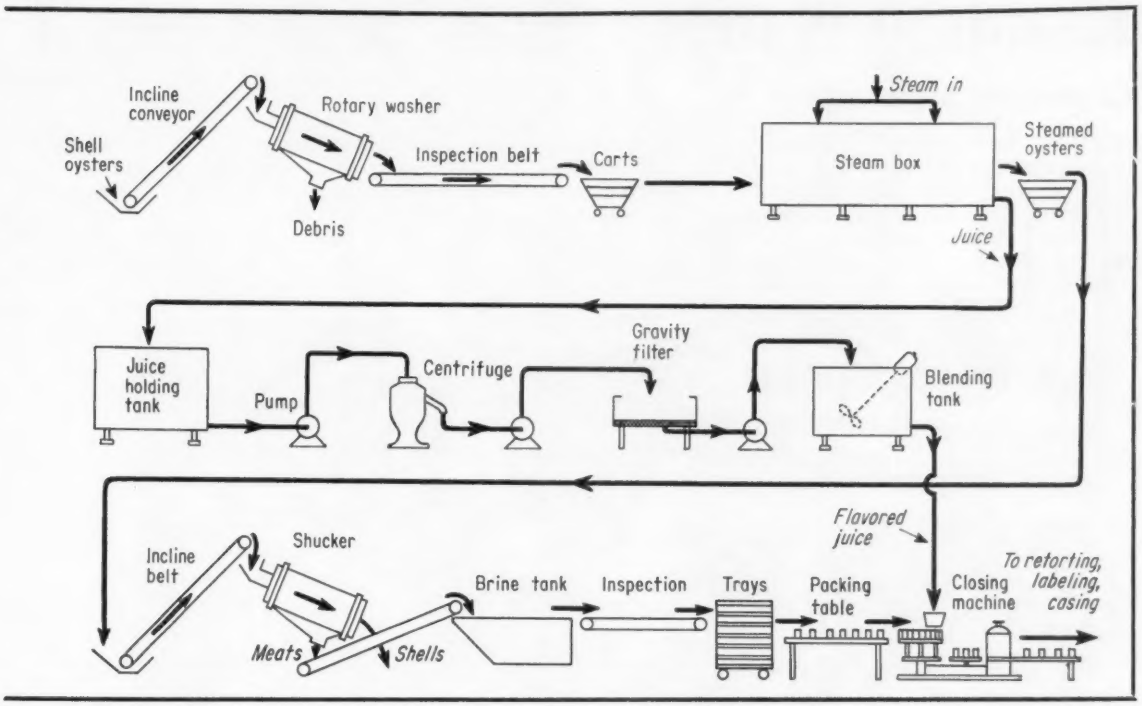
Shells are inspected for recoverable meats, as are also pieces from brine tank, then conveyed out of plant and carted away.

Popular New Product

Shellfish canner looks for cost reduction—and discovers



SHUCKERS are reel-type washers equipped with water sprays that separate meats from shells. They are fed steamed shell oysters by conveyors (left). Meats are discharged to wire-mesh conveyor below. There is further separation of small shell pieces from meats in brine tank (arrow).



From Former Waste

gourmet-item base that had been going down the drain

MAYBE YOU'VE lived with a specific production-line operation so long that you have complacently thought nothing could improve it.

We confess that we did.

For years, our plant—DeJean Packing Co.—had canned oysters on one of the lines without efficiency-promoting or cost-reducing changes other than installing a technique of automatic shucking (steaming and separating).

But recently, the profit squeeze spurred our management to search out ways to boost operating efficiency. Production and material costs were up, and selling prices couldn't be raised to make up the difference between the two.

It was then that we gave our oyster canning line a really exacting look—and noted a practice that definitely called for the spotlight: In steaming open the oysters for shucking, the liquor was allowed to go down the drain.

Why not use it to make a new product and thus extend our selling line—in short, engineer new product efficiency into our operation?

This certainly added up. So last year we installed facilities to salvage this liquor and refine it for use in the manufacture of a gourmet-style product—canned oyster stew.

Process Particulars

Launched last year, this new item immediately won wide consumer acceptance. A prime reason for the popularity was the fact that this was the first time Gulf-water cove oysters had been canned with their own taste-tangy juices, along with creamery butter and selected seasoning materials.

LEON HALL and WAYNE FORNEA

Respectively, General Manager and Production Manager, De Jean Packing Co., Biloxi, Miss.

Here's how we go about salvaging the oyster liquor:

From the oyster-steaming box, the liquor is drawn off through a 2-in. pipe and carried into an enclosed, vented 250-gal. primary holding tank. Then, as needed, a 1-hp. centifugal pump (Fairbanks-Morse) is employed to deliver the juice about 75 ft. to a 250-gal. rectangular stainless holding tank equipped with submerged steam coils.

Clarified Once More

Here it is heated to 205-210F. and fed to a 400-gph. DeLaval centrifuge. Juice is then again clarified (as a safeguard) by gravity-feeding it through single gauze-faced cotton filter disks (6-in. dia.). It continues into a 100-gal. surge tank.

A ½-hp. centrifugal pump now carries the oyster nectar to one 50-gal. and two 80-gal. steam-jacketed kettles equipped with vertical, propeller-type agitators (Lightnin).

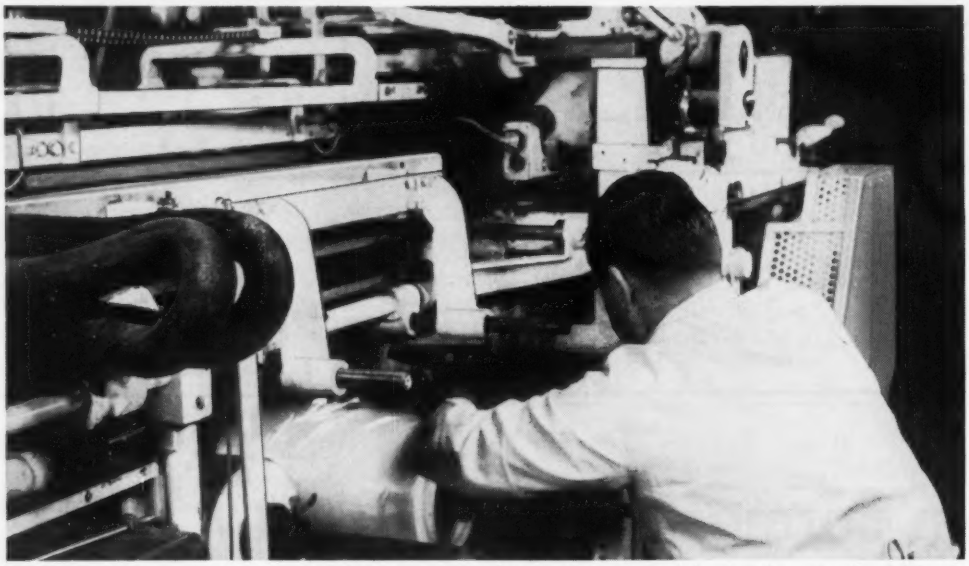
Other ingredients are now introduced, and the seasoned liquor is filled into 8- and 10-oz. cans containing whole, shucked oysters earlier hand-filled from two packing tables. Cans are finally sealed, retort-sterilized, cooled, labeled, and case-packed for shipment. —*End*

Packaging is more than "Skin Deep"!

PACKAGING PROBLEM:

Bakers have been tempted by the keeping qualities, durability and low cost of polyethylene film ever since its introduction as a packaging material. But for years the film was too cloudy to compete with transparent bread wrappers already in use, and there was no practical method of using it on standard bread wrapping machines. The polyethylene would not handle properly during the wrapping process. Then, too, the sealing range was so critical that standard equipment would either melt right through the film or else not seal at all. Finally, the film had a tendency to stick and drag on the heating elements as it passed through the machine.

For years, all attempts to solve these problems met with failure.



A Western-Waxide technician installs the first Crown-Seal conversion unit in Fluhrer's Bakery, Eureka, California.

SOLUTION:

Western-Waxide, with forty years service to the baking industry, understood the potential advantages offered to the baker in free-film polyethylene. Our Packaging Research and Development Laboratory launched a concerted effort to make these advantages available to the industry.

It was decided that the problem must be attacked in three phases: (1) Develop a conversion unit for standard wrapping machines to bring the temperature under control and keep the polyethylene from sticking and dragging during the wrapping process and to ensure proper folding. (2) Formulate a polyethylene film with the required transparency, high gloss and machineability. (3) Develop end labels and outsert bands to work under the specific temperature ranges with polyethylene and form a good seal with the new material.

Prolonged experimentation and engineering led to the development of a low-cost conversion unit for A.M.F. standard or super-standard wrapping machines which eliminated the sticking and dragging problem. Temperature-control features were incorporated which resulted in ideal sealing with or without end labels and would operate equally as well with waxed paper, cellophane or polyethylene. Phase one was a success.

The Packaging Research and Development Laboratory, working closely with Spencer Chemical Company in phase two, were rewarded with the development of a specially-formulated higher density polyethylene resin. A unique method of extrusion transformed the new resin into a crystal-clear film with the right balance of stiffness and softness.

Finally, a special coating for outsert bands and end labels was developed for use with the film which ensured a strong, positive seal on the bottom and ends of the package.

The result was Crown-Seal,* the first practical free-film polyethylene package for bread.

Western-Waxide package research and development turns problems *into* profits *for* you! *These services of our packaging research and development laboratories and personnel are available to solve your packaging problems. Write or phone your nearest Western-Waxide office today.*

*Crown-Seal is a trademark of Crown-Zellerbach Corporation

CROWN ZELLERBACH **WESTERN-WAXIDE DIVISION**

Headquarters Office: 2101 Williams St., San Leandro, Calif. • Plants and Sales Service Offices in Principal Cities of the United States

Manufacturers and converters of plain and printed waxed paper • foil • foil laminates • polyethylene coated paper and polyfilm laminates • films • bags • pouches and other specialized flexible packaging materials

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New and improved techniques of process drying, exclusively employed by Firmenich, yield powdered flavors that flow freely, are dust free, and give you the finest precision in flavoring your products. These important developments in quality flavoring will improve the taste appeal of your products . . . extend their shelf life . . . give them package-to-package uniformity that captures customer preference. Samples of Firmenich Powdered Flavors, with technical information on their practical application, on request.

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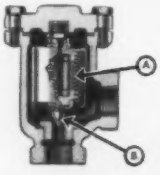
Full-range steam traps cut high cost of steam pressure variations

By John W. Ritter, Test Engineer
SARCO Company, Inc.

While boiler room economics dictate that boiler pressures remain constant, the equally sound economics of batch processing may decree that pressures at the equipment vary with the requirement of the process. The attempt to choose a steam trap that is all things to all conditions may result in installing traps that operate inefficiently at either extreme of their pressure range or that require adjustment every time the operations sheet calls for another pressure-temperature setting. Orifice traps represent a somewhat more rational approach to the problem, but often at the price of a continuous discharge of steam, particularly at the low pressures of start-up and shut down. Compromise, adjustment, and steam waste all spell inefficiency in the utilization of steam.

Production-Planned steam trapping, on the other hand, improves efficiency by the use of properly designed and installed thermostatic steam traps. Such traps employ the expansion and contraction of a thermostatic element to operate the discharge valve.



In Sarco Thermostatic Steam Trap, element (A) expands at steam temperature to close valve (B), contracts to permit discharge of condensate.

In the Sarco "Balanced Pressure" Thermostatic Steam Trap a volatile fluid is sealed inside a metal bellows that opens or closes the valve as it contracts or expands with condensate temperature. Near steam temperature, evaporation of the fluid creates an internal pressure greater than steam pressure in the trap body, and the expanding bellows seats the valve. When the condensate cools, the element contracts and opens the valve.

It is evident that at steam temperature pressure inside the element is higher than steam pressure, no matter how the latter may vary. Thus, the trap compensates automatically for variations in pressure.

5810B

Sarco "Balanced Pressure" Thermostatic Steam Traps cut trap maintenance costs and simplify parts inventory. Why? Because the same bellows, head and seat handle steam pressures up to 300 psi – without any need of adjustment for variations in load or pressure.

Other advantages: unmatched capacity/cost ratio (1" size discharges 9,650 lbs/hr. at 10°F below steam temperature, 125 psi). This trap can't air-bind and, when installed with free discharge, can't freeze.

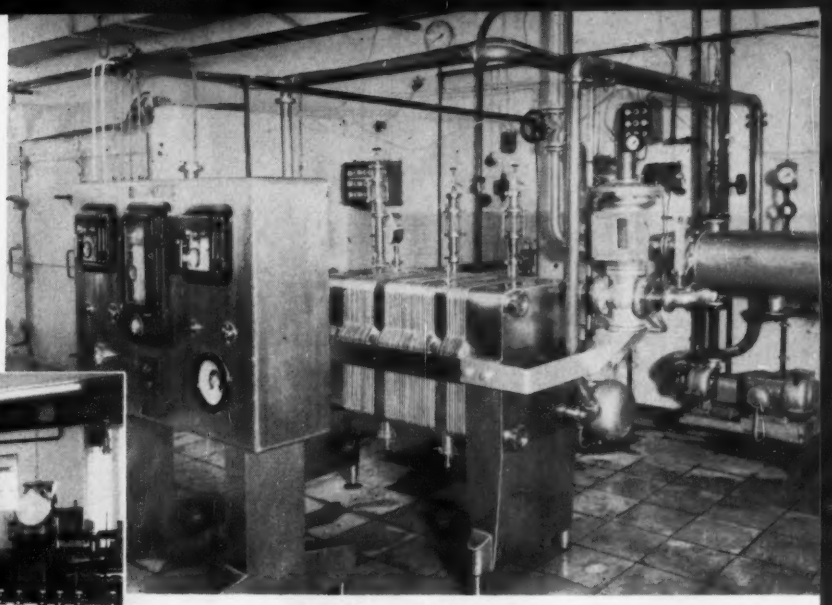
Long life and reliable performance are assured by an exclusive Sarco process for fabricating the one moving part – the thermostat – and by steam-testing of every single trap at maximum rated pressure.

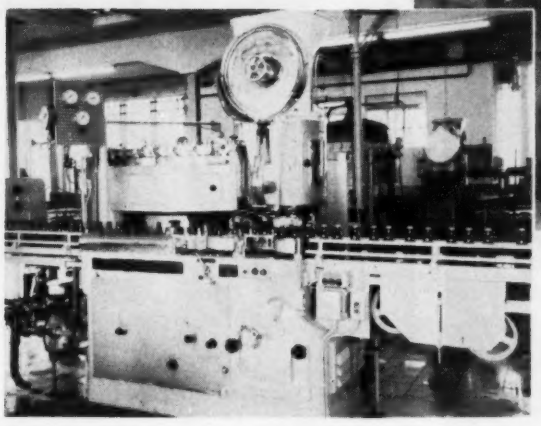
Write for "Literature Kit 1A" today. And remember, Sarco can give you impartial advice on *Production-Planned* steam trapping because . . .

SARCO
COMPANY, INC.
635 Madison Ave., New York 22, N. Y.

Only Sarco makes all 5 types:
Thermostatic • Liquid Expansion • Float Thermostatic
Thermo-Dynamic • Bucket

STEAM TRAPS • TEMPERATURE CONTROLLERS • STRAINERS • HEATING SPECIALTIES





THIS HEAT EXCHANGER does pasteurizing, is big space-saver. Beer enters at storage temperature, goes to the filler at 140-158F.

TUBELESS FILLER permits foam-free filling of hot beer into bottles at 130-140F.

Beer Bottled Hot—Via 'Exchanger'

★ Replaces old pasteurizers
★ Saves much space
★ Maintains high quality

BOTTLING of hot pasteurized beer as it comes from a heat exchanger—without releasing carbon dioxide or affecting product flavor—is achieved with a new filling process.

This operation, which is keyed by keeping beer and bottles at the same temperature, has the advantage of dispensing with the need of post-bottling pasteurizers.

Accordingly, the hot-filling installation saves almost 50% space. In fact, the whole compact setup takes no more area than a conventional pasteurizer.

Notable in the new process is a tubeless bottle filler. It allows a filling procedure free from splashing or exchange of heat energy.

H. BENECKE

McGraw-Hill World News, Bonn, Germany

Pasteurization in a conventional plate heat exchanger begins the new working routine, developed and patented by Dr. Bruno Kaiser of the Bavaria und St. Pauli Brewery, Hamburg, Germany. Pressure is controlled by an automatic regulator. Flow heater is equipped with the necessary ventilation features.

Foam-Free Filling

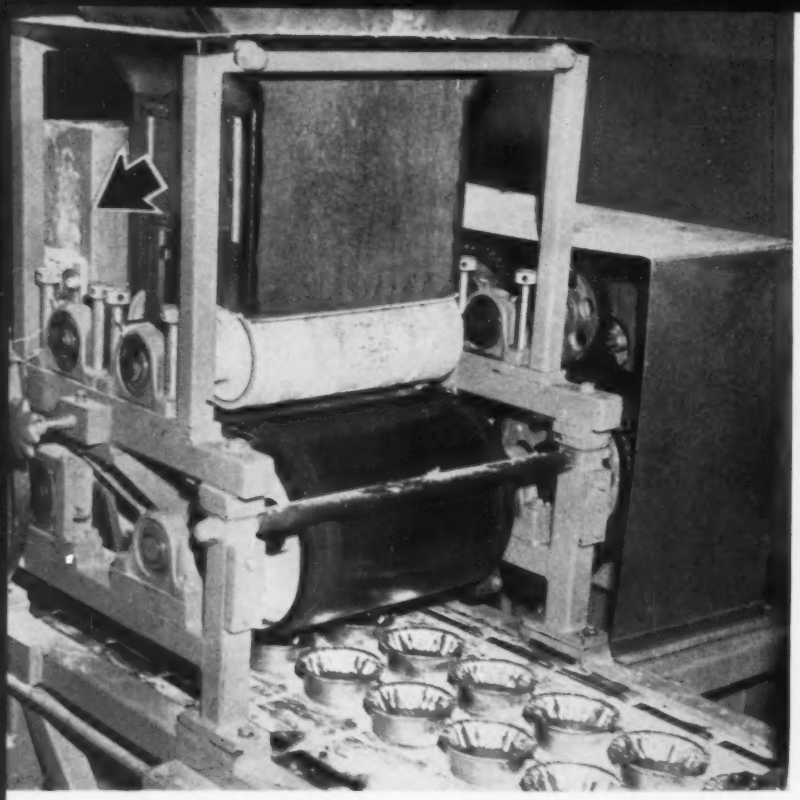
After running into the pre-warmed filler, the hot beer is foam free. It then goes, still foam free, through the tubeless valve and into pre-warmed and pre-stressed bottles. This filling proceeds under 9.5 atmospheres pressure at 140-158F.

Test runs in a pilot plant, specially built for the new process, showed that bottle breakage was very low and that labeling was made easier. This pilot plant was operated for six months. And during that time there were no breakdowns.

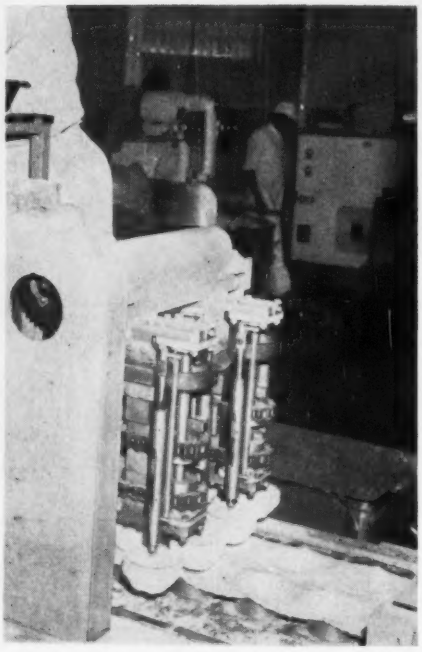
As stated, no changes in flavor were reported. And albumin stability was termed the same as with cold-filled beer. Further, it appears that the redox (reduction-oxidation) conditions of the beer have been improved by the new process. Meanwhile, the tests continue.

Only disadvantage has been in the storing of this beer. When the hot-filled bottles are continuously carried into store rooms, the temperature gets too warm. However, this problem can readily be surmounted through installation of additional refrigeration.

Theoretically, the hot-filling procedure also can be applied for canned beer. But as yet no tests have been made. —*End*



1 **PANS** are fed into molds, move under sheeter where dough is laid on them. Duster (arrow) sifts flour on rear roll. Pans move to . . .



2 **TAMPERS**, which then press dough into pans ready for filling.

Makes Pies 30% Faster

New machine turns them out at 175-per-minute clip with no more labor than was needed with former 125-a-minute unit

IMPROVED OPERATION and increased production per man-hour are prime goals of every food plant operator.

So it isn't surprising that executives of Libby, McNeill & Libby are enthusiastic about the 5-in. pie line at the company's Houston, Del., frozen food plant.

Produced on this line are both meat and fruit pies, which are automatically packaged, over-wrapped, and quickly frozen in Amerio plate units.

Heart of the operation is an improved machine (Kohler Pie Maker, Mayfair Products Co., Riverton, N. J.) that turns out pies at the rate of 160-175 per min.—more than 30% faster than conventional units—and with no additional labor.

Credited for this improved performance are the continuous sheeters that are adjustable to give any desired width of dough ribbon. Each is equipped with an automatic duster that feeds flour to one roll, thus preventing sticking of the dough.

The machine comprises an endless conveyor on which are mounted plate holders. These receive empty pans from magazines at front of machine, move them through the various filling steps, and eject them onto a discharge conveyor at end of filler.

Units That Do It

Other pertinent parts include: Two crust roller assemblies that feed ribbons of dough for bottom and top crusts, respectively; tampers that shape bottom crusts in pans; filler; automatic trimmer; crust crimper; and marker.

In operation of the line, the 5-in. aluminum pans are continuously dispensed into two rows of molds, then move under first sheeter, where a ribbon of dough is spread on top of them. Next comes automatic setting of dough into the pans to form bottom crust, followed by filling.

For chicken and turkey pies, measured quantities of gravy are added by the filler, and the meat is added manually as pies move to second sheeter. With fruit pies, however, the entire filling operation is performed automatically.

Second sheeter applies top crust ribbon, then pies move to the automatic crimper, trimmer, and marker, where excess dough is cut off and top crust is perforated. Trimmed dough is returned to first sheeter for use in bottom crusts.

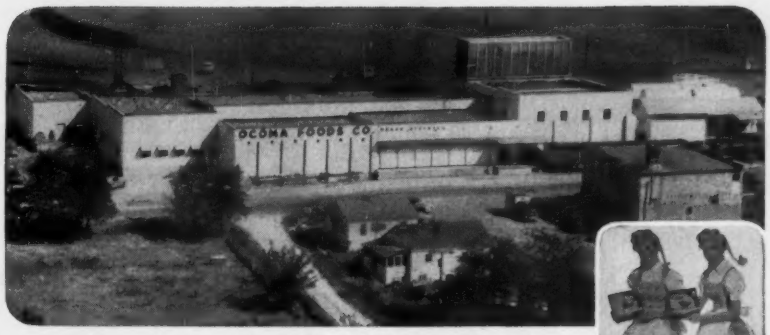
Pans are automatically lifted from the molds and set on a conveyor that moves them, single-file, to the Marapak cartoner. This unit forms the cartons, moves pies horizontally into them, then closes and discharges them to the overwrap machine.

—*End*

3 FOR CHICKEN PIES, filler (left) adds gravy, meat is placed on it, then sheeter (rear) applies top crust.

4 FOLLOWING CRIMPING and trimming, top crusts are punctured (rear), then pies are lifted from molds, lined up single-file on conveyor (foreground).

5 MARAPAK UNIT forms cartons, inserts pies from side, closes cartons, and feeds them to overwrap machine.



PROCESSING 30,000 CHICKENS DAILY WITH FRICK Refrigeration

OCOMA FOODS COMPANY, Omaha, Nebraska, one of the largest processors of frozen prepared foods and poultry in the country, knows that to obtain top production and maintain quality they must have the best in refrigeration. That is the reason Frick equipment is being used by this Company.

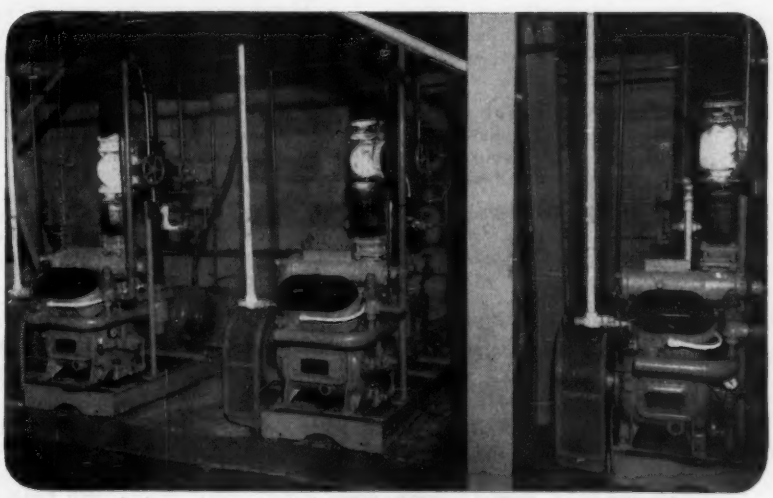
The Berryville, Arkansas plant, shown above, is among the finest poultry processing plants now operating. Frick equipment used in this plant consists of two 15 by 10 boosters, a 4-cylinder and two 6-cylinder "ECLIPSE" boosters, one 9 by 9 compressor, a 15-ton ice-making system, and several air cooling units.

Frick refrigerating equipment is the FIRST choice of many of the most successful firms. This because they know that Frick machinery is backed by over 100 years of engineering experience and will stand-up under continuous operation for longer periods of time with less maintenance.

Your nearby Frick Branch Office or Distributor can answer your refrigeration problems, and help select the right equipment for your needs.

Call . . . phone . . . wire . . . or write direct to . . .

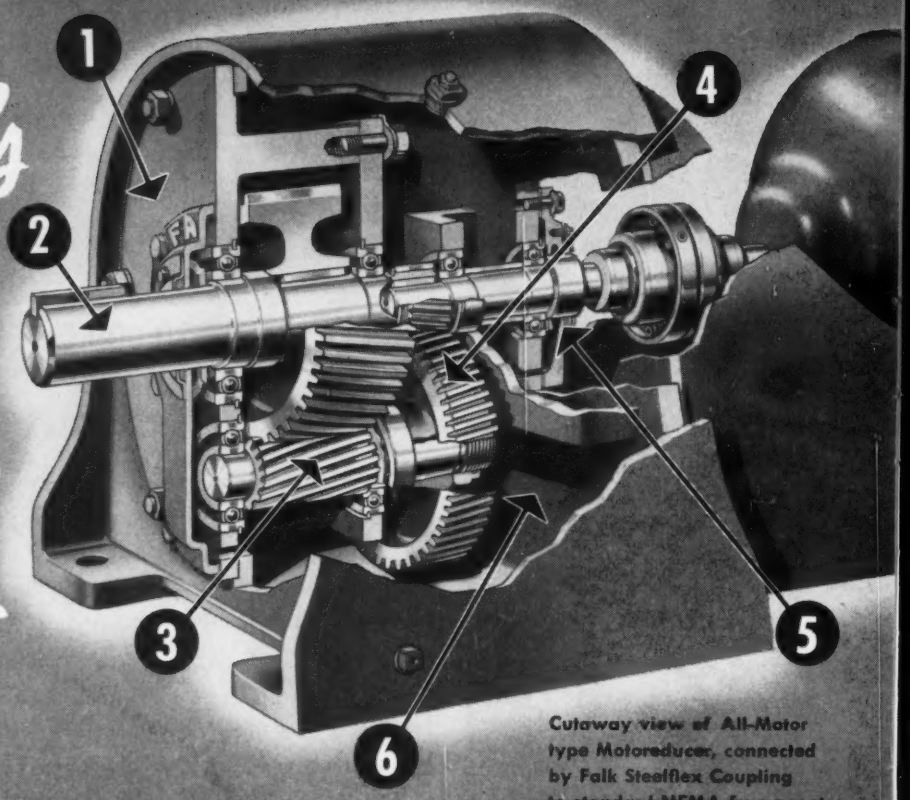
DEPENDABLE REFRIGERATION SINCE 1882
FRICK CO.
WAYNESBORO, PENNA., U. S. A.



A 4-cylinder and two 6-cylinder "ECLIPSE" compressors in Berryville plant of Ocoma Foods.

For more data, circle 262 on Reader Service Card

Here's the inside story—



Cutaway view of All-Motor type Motoreducer, connected by Falk Steelflex Coupling to standard NEMA frame motor

WHY Falk Motoreducers give better service—have longer life

Here is the "inside story" behind the all-steel All-Motor type FALK Motoreducer's universal reputation as a gear drive unmatched in quality, efficiency, dependability, ease of maintenance and long life. These "In-built" factors are—

1 **ALL-STEEL HOUSINGS.** Rugged, strong, rigid...all parts are manufactured from heavy steel plate, formed and welded in the Falk Weld Shop.

2 **LARGE OVERHUNG LOAD CAPACITY.** Large shafts, oversize bearings...rigid mountings with wide bearing spans to handle maximum applied loads.

3 **PRECISION GEARING.** Heat-treated alloy steel gearing, precision cut and shaved after heat treatment to eliminate distortion. Quiet, crown-shaved pinions.

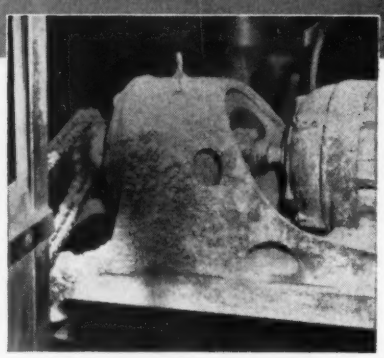
4 **EXTRA-CAPACITY GEARING.** Special extra-capacity gear-tooth form with larger contact area gives greater strength, higher load-carrying capacity.

5 **SEALED HOUSINGS.** Splashproof, dustproof, oil-tight construction. Dual closures and one-way vents keep oil in, dust and moisture out.

6 **POSITIVE LUBRICATION.** Large sump capacity...oiltight construction assures clean lubricant...revolving elements lubricated by direct dip.

When you buy or specify the All-Motor type FALK Motoreducer, you get all these—plus the tremendous advantage of full interchangeability of motors. Switch motors as desired—use any make, style or type of standard foot-mounted motor within the unit's AGMA rating—with a minimum of difficulty or "down time."

Available in sizes up to 75 hp—*with or without motor*—from convenient factory, field or distributor stocks, from coast to coast. **Write for Bulletin 3100.**



60,000 HOURS WITHOUT A FAILURE!

Sixty thousand hours is a lot of hours—but the FALK Motoreducer in the unretouched photo above has served that long without failure or need of repair.

This 3 hp unit is one of over 60 FALK Motoreducers in daily service in an Eastern plant of a large milling company, whose president says, in part:

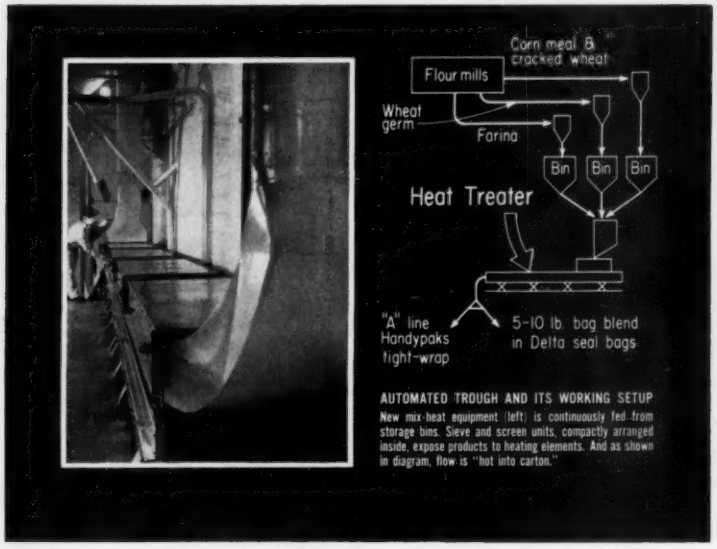
"One of the main advantages of FALK Motoreducers is their adaptability to any motor. Reducers and motors can be easily interchanged....Our service records confirm the wisdom of our choice of FALK equipment as our standard."

FALK ...a good name in industry

THE FALK CORPORATION, MILWAUKEE, WISCONSIN

MANUFACTURERS OF

- Motoreducers
- Speed Reducers
- Flexible Couplings
- Shaft Mounted Drives
- High Speed Drives
- Special Gear Drives
- Single Helical Gears
- Herringbone Gears
- Marine Drives
- Steel Castings
- Weldments
- Contract Machining



AUTOMATED TROUGH AND ITS WORKING SETUP
New mix-heat equipment (left) is continuously fed from storage bins. Sieve and screen units, compactly arranged inside, expose products to heating elements. And as shown in diagram, flow is "hot into carton."

This Heat-Treating Includes Carton

Double-action equipment wins superior quality control in 'switch from cools to hots' in flour and cereal packing

PRODUCT AND CARTON, TOO, are heat treated in an advanced operation employing a new milling-plant unit. Further, the equipment teams automation and quality control—operating continuously to turn out improved packs.

Set up in the grocery item division of Fisher Flouring Mills Co., Seattle, it's part of a modernization program touched off by introduction of a new Handypak line.

Basically comprising a long oscillating trough targeted by heating elements, the unit continually mixes and heats the materials right up to the packaging point. The necessary sieves and screens for sizing and culling are included in it.

This new equipment* is located right below the bulk storage bins. Wheat germ, farina, corn meal, and cracked wheat are put through. Reaching approximately 160F. in the unit, the cereals are around 150F. when sealed into the Handypak cartons, which accordingly are heat-treated in the operation.

Packaging-line controls regulate amount and flow rate of materials, which go through unit in 30 sec.

Cereals to be hot-packed are fed from their respective overhead bins directly into the vibratory feeder, which starts them on their trip through oscillating sieves, scalping screen, and bin screen, all integral parts of the unit. A pneumatic system disposes of the sieve tailings.

Focus on Control

Absolute control of flow of materials from each bin is obtained by means of telescope spouting. Preventing mixing, this allows only one type of material at a time to be fed into the unit.

From sieves and screens, the material passes into the oscillating stainless steel trough, 25 ft. long and 20 in. wide. The heat is supplied by electrical units ranged in bank form along the trough. They are insulated with asbestos blocks. And with each heating element on an individual circuit, it is possible to graduate the heat along the bank.

Gravity falls of 1¼ in. are provided at four points during the process to assure complete mixing of the material and to achieve uniform heating.

Treatment temperature is controlled electronically with four safety probes that continually proportion the heat and limit the range of variation to within 4 deg.

* Known as the "Chomalox" (engineered by Montgomery Bros., Seattle branch office).

Problem Solving at Huntington Laboratories

SURGICAL SOAP PREVENTS DERMATITIS IN POULTRY PLANT

At a large poultry plant, as many as half of the chicken pinners were kept away from work because of hand infections.

Management desperately sought a solution. Their Huntington representative suggested they try Germa-Medica,® a medicated liquid soap used by surgeons before operations. The idea was novel but practical because Germa-Medica, with 3% Hexachlorophene puts an invisible anti-bacterial "layer" on skin that kills germs on contact. The suggestion was highly successful. Now absenteeism is less than 10%.

Do you have a sanitation or maintenance problem? The Man Behind the Drum could help you. He's your Huntington representative. Write for his name.

HUNTINGTON LABORATORIES
INCORPORATED
Huntington, Indiana • Philadelphia 35 • Toronto 2

HUNTINGTON
. . . where research leads to better products

SANITILE WALLS

at less than 1/15th the Cost of TILE

Enjoy the sanitary advantages of tiled walls and ceilings for only a few cents a square foot. SANITILE can be applied over cement, plaster, brick or wood by brush, spray or roller. Notice the high-gloss, glass-smooth surface that resists fungus, mold, grease, steam and repeated washings. Imagine the sparkling appearance of your processing rooms and coolers with a ceramic-like SANITILE surface, without joints or crevices to catch contamination and bacteria. Think of the savings over repeated paintings — on maintenance and sanitation costs. Write today for facts.

RESISTS
Steam, Condensation, water, acids, alkalies, oils & greases

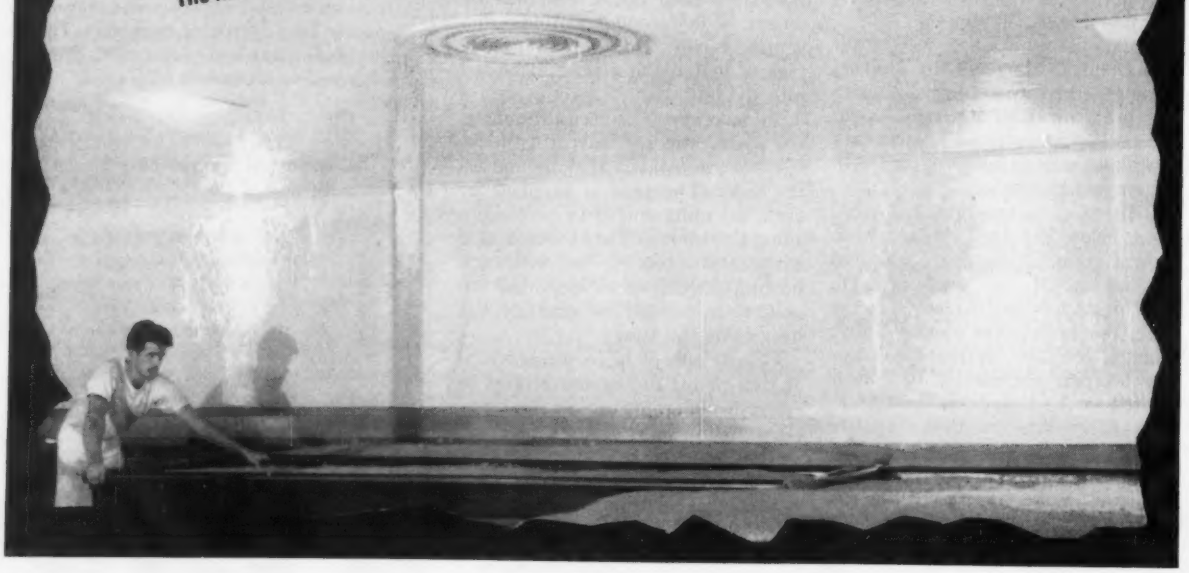
RESISTS AND PREVENTS
Fungus, mold and bacteria

Serving the food industry since 1913.

EQUITABLE SERVICE SEAL

MASTER MECHANICS

The MASTER MECHANICS Co., 2097 Columbus Road, Cleveland 13, Ohio
The Master Mechanics Chemical Co. (Canada) Ltd., 88 Richmond St. W, Toronto



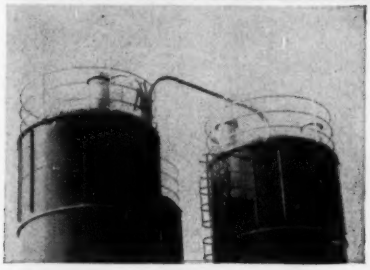
For more data, circle 265 on Reader Service Card

SPROUT-WALDRON

Pointers

for Mixing and Blending • Size Reduction
Size Classification • Bulk Materials Handling • Pelleting and Densifying

Published in the interest of better processing by Sprout, Waldron & Co., Inc., Muncy, Penna.



FLOUR FLOWS LIKE WATER

When the Wonder Bread Division of Continental Baking Company went to pneumatic bulk handling just about a year ago it was the first operation of its kind in the West. Although many similar systems have been put in operation since, the Wonder Bread story is well worth repeating.

Storage capacity, equal to over 10 carloads of flour, is held in three 14′ diameter vertical Permaglas bins. Airslide cars, unloaded by S-W Portaflow Units, blow the flour through 4″ conveying lines right to the top of the 50 foot high bins.

"The flour flows like water" is the most common expression you'll hear around this plant. Although our engineering division tells us that true fluidization in any pneumatic system is only possible for short distances, when you see flour being unloaded and binned at the rate of 1000 lbs/minute, you feel like saying that if this flour isn't flowing like water, it sure is mighty close! Reprints of the article describing the system at Wonder Bread are available on request. Our files contain many case history articles, catalog and technical reports. For prompt analysis of your materials handling problem, contact your Sprout-Waldron representative.

LABORATORY PELLET MILL USED IN RESEARCH

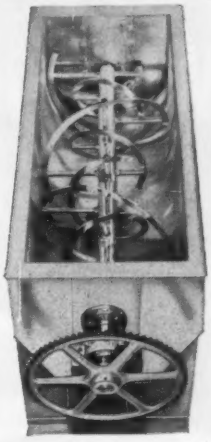
The Sprout-Waldron Laboratory Pellet Mill exactly reproduces the end results to be anticipated from high production pelleting machines. This enables researchers to complete studies on many applications involving pelleting and to project operating methods and costs.

The Sprout-Waldron Laboratory Mill is not a miniature pelleter, hence there are no complicated factors needed for scale up. Production rates are directly proportional to the horsepower utilized. Here is a piece of lab equipment which has every advantage found on production models. A large variety of die sizes is available from stock and the machine can be fed by hand or by any number of mechanical feeding devices. For details, ask for Bulletin 176.

— SW —

THE BIG PLUS

Copies of the S-W condensed catalog (Bulletin No. 178) of equipment and systems for the chemical and processing industries are still available. This two color, 20 page booklet illustrates attrition, hammer, roller and pellet mills; vertical, horizontal and continuous mixers; sifters, crushers, blenders, bucket elevators, conveyors, feeders and the complete line of pneumatic handling equipment, bulk trucks and storage structures.



TROUBLED WITH A "DIRTY" MIXER?

Pigment and dye manufacturers know the danger of color contamination. That's why so many of them specify the Sprout-Waldron mixer with its smooth crevice-free stainless steel interior.

Take a good look at the unretouched interior above. Notice the smooth surface, the large radius welds, the absence of bolts and the many signs of Sprout-Waldron craftsmanship which assure you of a mixer that is easy to clean, and designed to produce perfect batches day in and day out.

This small Laboratory Mixer is suitable for production work. Its features include: variable speed drive, stainless steel construction throughout, jacket for heating or cooling, thermometer well and flush type, liquid-tight plug gate. From the smallest Lab Mixer to the largest conceivable production model, you can rely on Sprout-Waldron know-how to keep your products free from contamination. Ask for Bulletins 194, 128 and 148.

CP/103

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US RUBBER CONVEYOR BELTS

The clean, sparkling good looks of the U.S. Little Giant® Food Belt make it the ideal conveyor belt for inspecting meats. The food is sharply visible, imperfect items can be instantly spotted. The belt gives a big boost to employee morale and efficiency, too—makes a fine impression on visitors.

White is right—on sight.

The U.S. Little Giant Belt is easy to clean. It does not absorb foreign matter, hence never becomes rancid or moldy. Non-porous, odorless, non-contaminating.

There's a U.S. Little Giant conveyor belt for every branch of the food industry—in the right color for the highest working efficiency—for example, black, orange, green and white are stocked. Other colors available if required. We will recommend the right color for your belt's inspection line.

• • •

When you think of rubber, think of your "U.S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

US RUBBER

Mechanical Goods Division

United States Rubber

Rockefeller Center, New York 20, N.Y.

In Canada: Dominion Rubber Company, Ltd.

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Special Racks, Rotating Forks, Streamline Produce Handling

Here's a method for transferring such hard-to-handle products as stalks of bananas with a minimum of labor and damage to the fragile fruit.

At Eisner Food Stores new Champaign, Ill. warehouse, stalks of bananas are received in vertical positions is refrigerated rail cars. Upon arrival, an "A" rack (left photo) is moved to car door by a lift truck. Two treated 4x4's with equally spaced hooks in each, are placed on the rack (arrows).

Bunches of bananas are moved from the car on special 2-wheel hand trucks and hung on the hooks. When hooks are filled, fork truck operator picks up the two 4x4's and moves them to one of the six (car capacity) ripening vaults. By this method, two men in a car and one lift truck operator unload a car of bananas in 2 hr.

Each ripening room is equipped with metal beams (right photo) onto which the loaded 4x4's are placed by the fork truck. Pertinent to this operation is the special type fork truck —Automatic Transportation Co's. Docker with rotating carriage. By inverting the forks, truck is able to pass beneath top sill of vault entrance and place loaded beams in ripening room.

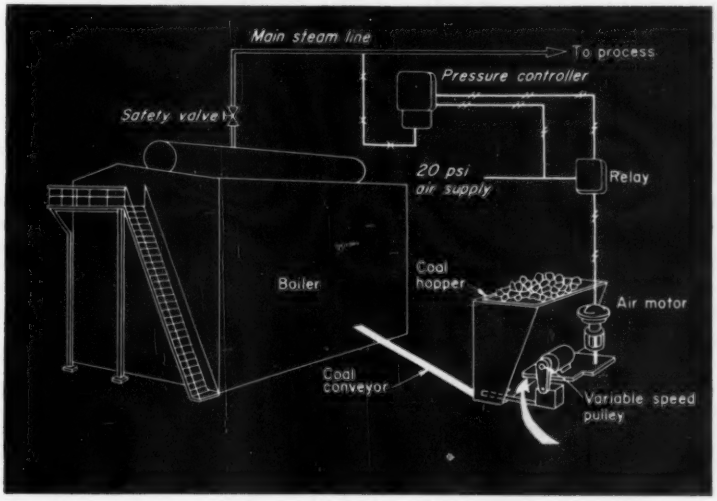
When the bananas are ripe, fork truck transfers loaded 4x4's to a motorized accumulating rack with a capacity of 44 stalks. Here stalks are removed from the bars by cutters who strip off the bananas and pack them into 40-lb. boxes for delivery to company stores.

Improved Stoker Control Eliminates Process Lag

Here's how ingenuity and a small cash expenditure overcame a troublesome and production limiting bottleneck at Green Giant's, Fox Lake, Wis., cannery.

Stoker of plant's coal-fired boiler had a 3-speed manual adjustment on the feed mechanism. When cannery was operating at capacity, second speed couldn't furnish enough steam. But on 3rd speed, pressure soon increased beyond the safe limit causing an on-off switch to shut down the stoker.

After stoker stopped, steam pressure had to fall considerably below desired value before the switch cut



Atlas

ENGINEERED FLOORS PROVIDE POSITIVE PROTECTION

. . . from bacteria and corrosion!

Atlas Food Plant Floors provide positive protection against a wide range of corrosives—from the most aggressive food acids to today's strongest cleaning agents. Since they are not attacked they are completely sanitary and offer no haven where harmful bacteria can collect and germinate.

Individually engineered to your exact specifications, these floors combine permanent attractiveness and wearability that eliminates costly maintenance.

For complete information write for your free copy of Bulletin 3-2.

ATLAS MINERAL PRODUCTS COMPANY
MERTZTOWN, PENNSYLVANIA

Practical Ideas

in drive motor to restart the stoker.

Company's mechanical engineering manager, C. V. Fitch finally devised a system which enables the boiler to operate at desired capacity at all times.

He first disconnected the 3-speed control system and pivoted the stoker motor mount (arrow in drawing). Then he installed a variable speed pulley on the motor shaft. Effect of these changes was to change speed of feed mechanism according to position taken by the motor as it moved on the pivot.

Next, Mr. Fitch installed an air motor (from a discarded control valve) to raise and lower stoker motor in response to air output signal of a pneumatic pressure controller (Honeywell Pressuretrol) connected to main steam line. An air volume booster relay (also used) was placed in the line between controller and air motor to provide enough pressure to operate latter. Plant instrument air, at 20 psi., is supplied to both controller and relay.

Now, when set point of controller is adjusted to desired value, any deviation from correct steam pressure changes air output signal to air motor. If steam pressure increases above set point, controller decreases its signal causing relay to release some air in the motor. Latter then raises stoker motor and the belt moves over a smaller diameter on variable speed pulley. This reduces amount of coal being fed to boiler.

When steam pressure drops, controller increases its air signal and air motor moves in the opposite direction. This causes the belt to move over a larger circumference on motor shaft and increase feed of coal to boiler. New system has completely eliminated the serious pressure drops and time lags associated with the former hookup.

With the exception of the pressure controller, all components were found at the plant.—*Industrial Control News, Pub. by Minneapolis-Honeywell Regulator Co.*

Let's Have Your Ideas

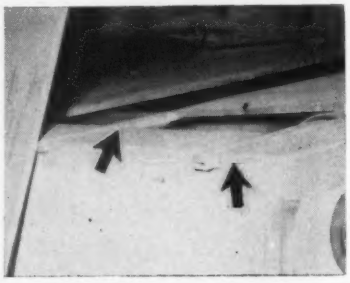
Send your ideas to FOOD ENGINEERING.

We'll pay $5 to $15 (sometimes even more) for each contributed item used.

Just send us the facts about your idea and its application. And include a free-hand sketch or snapshot to show how it works.

We'll do the finished writing and drawing for you.

Send you idea today, before you forget. Address it to Practical Ideas Editor, FOOD ENGINEERING, 330 W. 42nd St., New York 36, N. Y.—The Editors.



Easy-Does-It Tank Covers

Getting cooling coils out of our sweet water tanks (used to chill water for processing) proved to be a chore, especially when they had to be replaced. When this happened, screws holding the four covers on this rectangular tank had to be removed then they had to be inserted again. This took a lot of time.

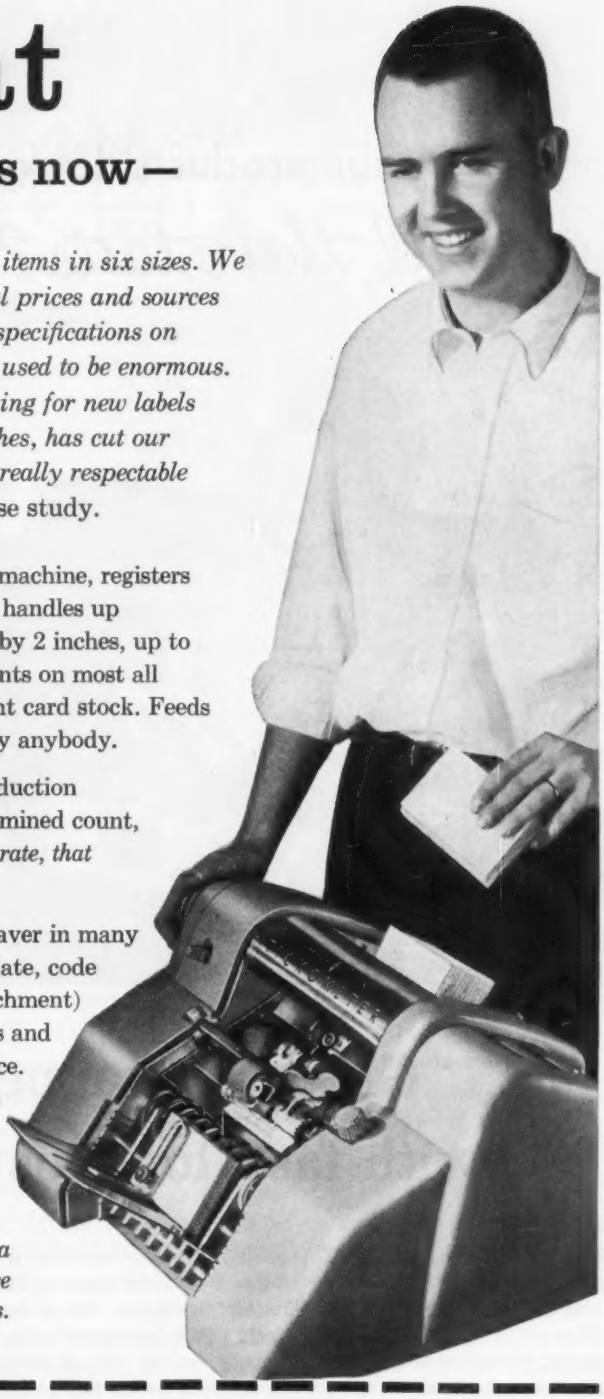
In order to overcome this, we designed special 2-ft. wide removable galvanized iron covers (see photo). These flanged units are neatly secured by inverted metal channels (arrows) that run the full length of the tank. Channels are slightly pitched to drain off condensing water.—*Henry Maas, Maintenance & Engineering Supt., Rochester Dairy Cooperative, Rochester, Minn.*

Portable Aluminum Racks Up Bakery Sanitation

Speedier handling of pans of baked goods—with efficiencies not heretofore attained—and improved sanitation are two of the big benefits re-

"No sweat

...over label changes now—



"We have a hefty product line, with some items in six sizes. We also put out some private brands. As material prices and sources change from time to time, we have to change specifications on our labels—and our waste of unusable labels used to be enormous. Sometimes we had to hold up shipments waiting for new labels ... The Tickometer spares us a lot of headaches, has cut our printing costs and inventory, and given us a really respectable saving on label waste."—From an actual case study.

• The Tickometer is a precision imprinting machine, registers accurately impressions up to 2⅜ by ⅞ inches, handles up to 1,000 pieces a minute. It takes sizes from 1 by 2 inches, up to 15 by 15 inches, according to the model. It prints on most all standard weights and finishes of paper and light card stock. Feeds and stacks automatically, can easily be used by anybody.

• It also *counts*, gives another check on production output and shipments. It can make a predetermined count, and register full or part totals. *And it's so accurate, that banks use it to count currency!*

• The Tickometer is also a time and work saver in many other ways... can stamp, mark, cancel, sign, date, code and number consecutively (with an extra attachment) coupons, cards, tags, tickets, sales slips, checks and forms—soon pays for itself in any plant or office. It can be rented or bought. And Pitney-Bowes service from 302 points, coast to coast, assures constant and economical operation.

Call the nearest Pitney-Bowes office for a demonstration. Or send coupon for free illustrated booklet and case studies.

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Made by the originator of the postage meter... branch offices in 107 cities in U.S. and Canada.

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Give them appetizing sparkle with fast, low-cost Celite filtration

How GOOD does it *taste?* How good does it *look?* It's all the same to the busy supermarket shopper. That's why so many processors of fruit juices, jellies, cooking and salad oils, syrups and other liquid products are now using Celite* diatomite filtration.

Celite removes the finest suspended solids . . . actually *polishes* your products to a dazzling clarity . . . gives them the looks that sell more shoppers. And it does all this with a minimum of trouble and cost . . . providing almost automatic operation at fastest flow rates when used with any standard pressure filter. Of course, Celite never affects the most delicate flavors.

Celite also gives you important advantages over other diatomites. Its lower wet density means greater filter surface coverage and its higher uniformity provides more consistent results. Get the full story from your nearby Celite engineer or write Johns-Manville, Box 14, New York 16, N. Y. In Canada, 565 Lakeshore Road East, Port Credit, Ontario.

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica product

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville CELITE diatomite filter aids

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sulting from use of new, roomy, all-aluminum racks in our bakery.

The racks (photo) comprise two sections, each holding 15 pans (2 doz. rolls per pan). They are 71 in. high, 43 in. wide, 29 in. deep, and built of 1⅛-in. aluminum rods. Three of these rods were bent to form the supporting top, sides and bottoms.

Smooth-welded to this frame are four center rods that separate racks into two sections. Also, 60 aluminum rods (½-in. dia.) were welded to the uprights to form smooth, horizontal shelves.

Each rack is mounted on four 5-in. swivel-type casters, coated with 2-in. thick non-corrosive plastic material to facilitate handling and reduce noise.

In addition to speeding operations, these new racks have proved superior to our former wooden and galvanized ones because they—

1. Deliver merchandise to route trucks in better condition and minimize returns.

2. Simplify handling, since they are constructed of light-weight aluminum.

3. Are far more sanitary. Their round, smooth edges of non-porous material present no corners for dirt to accumulate. They clean, rinse and dry easily in the mechanical washing machine.

4. Require no maintenance.—*Minos Asproyerakas, Vice President & Chief Engineer, National Baking Co., Chicago.*

PRACTICAL TIPS

• At Green Giant Co.'s plants, painted cans used to mark lot changes, previously sold as "jams", are now used as plant grading samples.

• At company's Glencoe factory, air pressure is applied to 75-oz. filler to force corn out of pockets and into cans. Change saves product, eliminates down time.

• To prevent possible injury to mechanic when repairing refrigeration unit in cold room or freezer, install switch at unit in addition to the one on outside of room.

• To eliminate possibility of weighing too much material into a scale hopper, install Micro Switch so that it will be actuated by piece of angle iron attached to beam of scale. Connect switch so it opens airport in material line and stops flow when depressed by angle iron.

• Place standby equipment such as motors on platforms or dollies equipped with casters so they can be easily moved for cleaning or to new locations.

GLOBE BELTING

• Over 4 decades of Globe research has resulted in the finest quality of belts for the food industry — each one product-planned for efficiency.

Special constructions, impregnations and coatings have been developed to meet every conceivable problem of sanitation and resistance to acids, grease, oils, fats, alkalies or any other harmful elements.

For installations under the most adverse conditions or for standard applications, a Globe belt will give you unusual desirability, maximum service and minimum shutdowns.

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WHITE SOLID WOVEN COTTON BELTING • PRESS-CURED KANRY-TEX BELTING • WATERPROOF AND WAX TREATED BELTING • HYCAR BELTING • NEOPRENE BELTING • PLASCELL BELTING • CELLULOSE BELTING • STITCHED CANVAS BELTING ROUND BRAIDED ENDLESS BELTS • HEVALOID ENDLESS BELTS WOVEN ENDLESS BELTS • CLEANER AND SIFTER BRUSHES WEBBINGS • HOISTING SLINGS • BELT DRESSING

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GLOBE WOVEN BELTING CO., INC.
1400 CLINTON STREET • BUFFALO 6, NEW YORK

KNOWN FOR QUALITY THE WORLD OVER

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Nash Compressors are Built for Long Life and Constant Performance

It's the Nash!

The ability of Nash Compressors to maintain original performance over long periods is no accident. Nash Compressors have but a single moving element, the Nash Rotor. This rotor is precision balanced for long bearing life, and it revolves in the pump casing without metallic contact. Internal lubrication, frequent cause of gas contamination, is not employed in a Nash. Yet, these simple pumps maintain 75 lbs. pressure in a single stage, and afford capacities to 6 million cu. ft. per day in a single compact structure.

Nash Compressors have no valves, gears, pistons, sliding vanes or other enemies of long life. Compression is secured by an entirely different principle of operation, which offers important advantages often the answer to gas handling problems difficult with ordinary equipment.

Nash Compressors are compact and save space. They run without vibration, and compression is without pulsation. Because there are no internal wearing parts, maintenance is low. Service is assured by a nation-wide network of Engineering Service offices. Write for bulletins now.

- No internal wearing parts.
- No valves, pistons, or vanes.
- No internal lubrication.
- Low maintenance cost.
- Saves floor space.
- Desired delivery temperature Automatically maintained.
- Slugs of liquid entering pump will do no harm.
- 75 pounds in a single stage.

NASH ENGINEERING COMPANY
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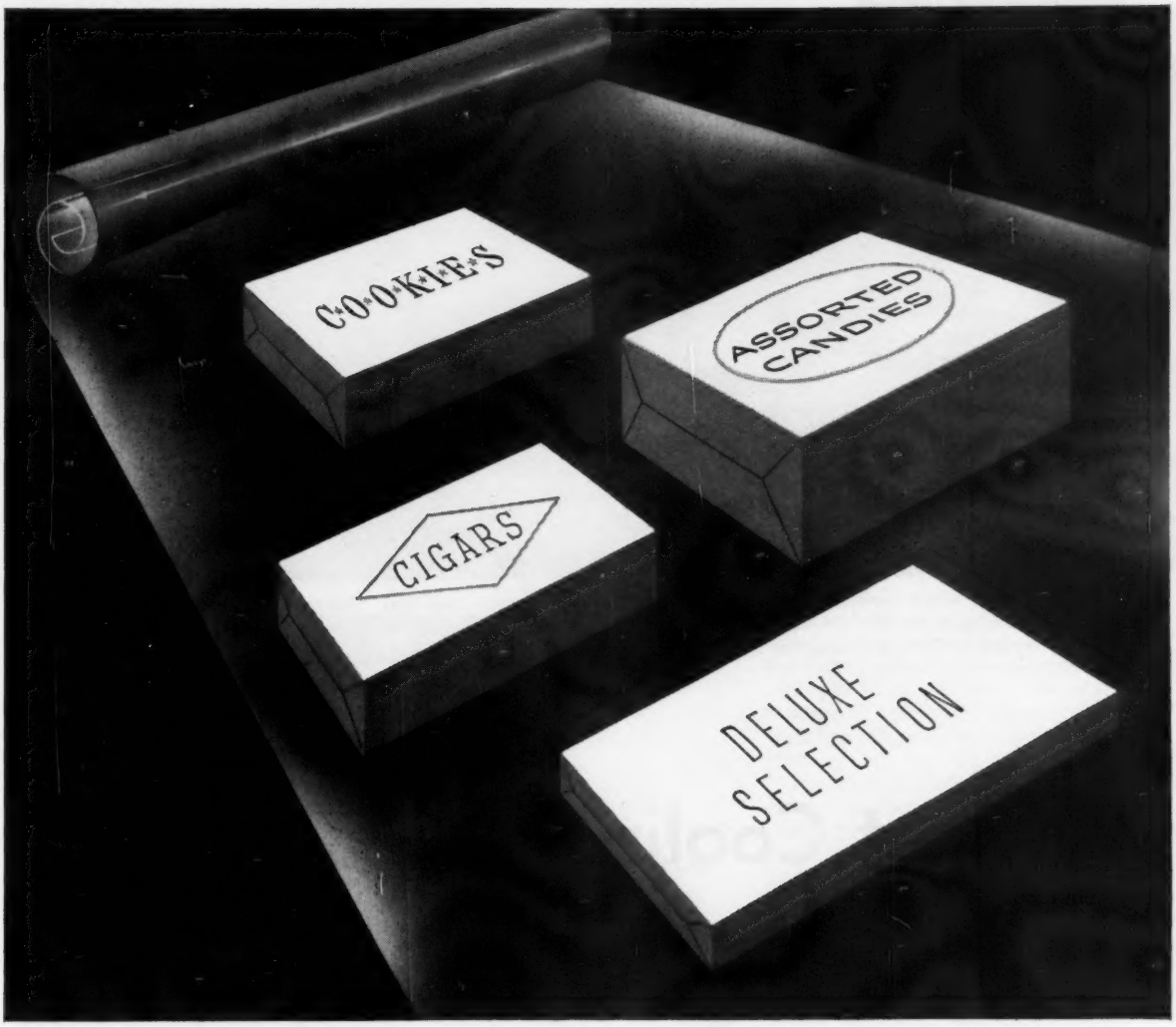

NOW...WRAP WITH POLYETHYLENE

on the fast, versatile PACKAGE Model FA-2

All the advantages of neat, attractive wrapping *using polyethylene* are now available on Package's Model FA-2. This widely-used machine now handles polyethylene films, at speeds from 30 to 60 packages a minute. Special features have been added to assure trouble-free operation.

All FA-2 parts in contact with the poly-covered package are Teflon-coated to prevent drag. A long-seam bar sealer eliminates stationary bottom heaters. Thin Fiberglas belts—an exclusive Package application—cover flexible side heaters and coolers, assure fast, positive sealing of the double-point end folds. Special thermostats give accurate temperature control, and electric static eliminators are attached to the paper feed.

Add the longer shelf life and greater moisture protection of polyethylene by wrapping on the versatile FA-2. Its special new features are another advance by Package engineers, who in the past have pioneered many of the methods of handling polyethylene used throughout the industry today. For full details on the Model FA-2, contact your Package representative.

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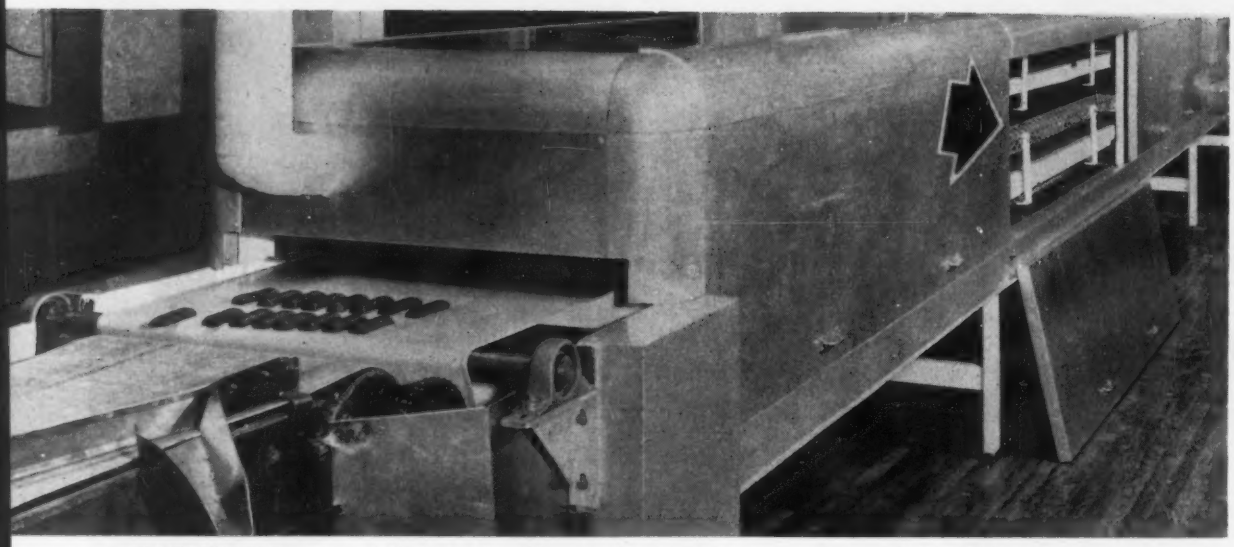

SPACE-SAVING radiant cooling tunnel swiftly sets chocolate coating on candy bars. Side panel has been removed (arrow) to show positioning of polyethylene-coated plate coils above and below carrier belt which moves over expanded-metal glide bed. Coils operate at 20F., and tunnel air is at 55F. dry bulb/42F.,wet bulb.

Radiant Cooling: Boosts Quality, Volume of

CHALK UP radiant cooling of products as a front-runner in today's tight race for new economic values in food processing.

Installed in established plants, it recovers much-needed floor space as well as boosts volume output of product. And projected for new plants, it represents significant capital savings.

Take baking. In these operations, it requires less floor space between ovens and packaging lines, delivers more—in poundage—of better quality products, and assures independence from seasonal weather factors.

Few in this field realize the actual extent to which their products—fresh out of the oven—are cooled by moisture evaporated from them. Such evaporative cooling is more rapid as moisture content and product temperature increase.

Specifically, the tendency of water content to change over to water vapor is directly related to prevailing temperatures and associated energies in the water molecules. And all this has a bearing on weight and quality of the various marketable products.

Bread, rolls, buns, fig or other fruit bars, and many other such oven-baked products that are high in moisture, may lose as much as 5% of their weight when they are cooled on open-air conveyors or racks.

Heat required to vaporize this loss is equivalent to over 80% of the total sensible cooling needed. Our accompanying table shows how both tendency of the product to lose moisture and the ratio of the evaporative to total sensible cooling decline as products cooled range lower on the moisture-content scale.

It's obvious, therefore, that evaporative cooling and product moisture loss factors are important in open-air cooling of such products. It's also apparent that open-air cooling shifts more toward straight convective cooling with products containing lower moisture content. It's also evident that such evaporative cooling will be sharply influenced by the moisture content of the surrounding air during all seasons of the year, but especially in summer heat when the moisture content usually is highest.

In this case, relative humidity is of much less importance than absolute moisture content of the air, for the hot product creates its own environmental temperature conditions. Fans are helpful in periods of difficut cooling, mainly to disperse the evaporated product moisture and, to a lesser degree, to increase actual convective air cooling.

Loss of product oven-freshness is, of necessity, closely tied to this evaporative cooling. Aroma and "fresh" taste are dependent, to a

C. A. MILLS

President, Reflectotherm, Inc., Cincinnati

RC Is RH in Reverse

Basically, radiant cooling involves radiation of heat from a product to specially designed surrounding surfaces.

Thus, it might be called the application of radiant heating in reverse flow.

A prime advantage is that this type cooling doesn't shrink the products.

Nature of the special surrounding surfaces receiving the heat determines the net heat loss from the product.

The radiant component of heat release depends principally upon the temperature difference between product and surrounding surface and the emissivity values involved.

THE LESS MOISTURE your Products have, the less they lose and the lower the Evaporative: Total Sensible Cooling Ratio.

	Bread & Rolls	Fig Bars	Cookies	Crackers
Moisture, Oven Exit (%)	40.00	20.00	6.00	3.00
Moisture, Packing Table (%)	35.00	16.00	4.00	2.00
Moisture Loss (%)	**5.00**	**4.00**	**2.00**	**1.00**
Heat to Vaporize (Btu./lb.)	45.60	34.40	18.30	9.10
Specific Heat (Btu./lb.) F.*	0.61	0.50	0.39	0.37
Sensible Cooling Needed, Btu./lb. (190-100F.)	54.90	45.00	35.10	33.30
Evap. Cooling (as % of Sensible Cooling)	**83.00**	**81.00**	**52.00**	**27.00**

*Specific heat calculated on basis of 0.35 for all ingredients except water.

Product While Saving Valuable Space

large degree, on volatile and readily oxidizable compounds, which are lost along with the evaporating water or destroyed by the unduly retained product heat.

Where it is desirable to (1) shorten product-cooling time, (2) reduce salable poundage losses, (3) conserve valuable space, and (4) retain a greater degree of oven-freshness, it seems obvious that radiant heat removal should replace, as far as possible, evaporative cooling.

To attempt more rapid cooling through conventional air conditioning methods only accentuates product-moisture losses. Since water vaporization is a function of both time and temperature, it follows that a more rapid drop of product temperature from radiant cooling must correspondingly cut evaporative loss.

What to Do

You can avoid undue product drying and loss of valuable poundage and flavor. And you can shorten the cooling process. To do so, it's recommended that liquid-cooled cold plates (operating just above freezing temperatures) be positioned vertically above the enclosed product conveyor (with reflector above and drip troughs below) and horizontally below it.

Air movement should be restricted to the natural convection currents arising from the hot product. This way, the moisture-saturated air layer (next to the product) will be undisturbed. Thus, moisture loss from the product, at any point, will be minimized, and the duration of the cooling process will be brought down to approximate the baking time.

Moisture loss can thus be reduced by about 50%, and the length of the cooling conveyor (for fig bars, for instance) brought down closer to the length of the oven.

Salable value of the increased product poundage will, within a short time, cover the entire cost of the radiant-cooling equipment.

With some products, of course, further moisture retention is not desirable. Here, radiant cooling should be accompanied by whatever degree of air turbulence is necessary to give the finally needed moisture content.

Even with such products, shortening of the cooling time aids in retaining oven-freshness.

In bakeries still cooling on movable racks, radiant cooling can be applied—but somewhat less efficiently—by erecting the liquid-cooled plates as stall-like partitions between which the product racks are stationed.

The same radiant-cooling principles described elsewhere[1, 2, 3] also apply to fresh oven products. But the presence of considerable amounts of liberated water vapor renders impossible the use of sub-freezing plate temperatures as is practiced so advantageously in the hardening of chocolate coatings.

Radiant cooling, with carbon-blacked low-temperature plates does, however, become very useful when the baker desires to freeze his product and seal in its oven-freshness. In such cases, the product is brought down to 100F. as rapidly as possible, sealed in a moisture-proof wrapping, and then exposed to low-temperature cold plates in air with dewpoint maintained below the desired plate-operating temperature to avoid plate frosting.

The major part of the cooling load in such product freezing consists of the latent heat given off as the product moisture is transformed into ice. This ultra-long-wavelength radiant heat passes out freely through all types of organic or plastic wrappings, to be absorbed by the carbon-blacked cold plates.[3]

The situation is somewhat different for the shorter wavelength infra-red rays given off by the product as its sensible temperature drops from 100F. at the wrapping machine to the 32F. freezing point.

Only a few of the commonly available organic or plastic wrappings are penetrated by these shorter infra-red rays—cellophane being almost totally impermeable to them. However, polyethylene films are freely penetrable by infra-red radiant-heat waves of all lengths, while being impermeable to watervapor.

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2. Ibid., "The Mechanics of Radiant Heat Transfer", *Manufacturing Confectioner*, Jan. 1958, p. 21.
3. Ibid., "Latent vs. Sensible Heat Removal in Radiant Cooling", *Refrigerating Engineering*, Mar. 1958, p. 43.

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NO INSECT HARBORAGES HERE: Food dusts, which invite infestation, are regularly removed from hard-to-get-at surfaces, such as this overhead ledge. Portable vacuum cleaner makes job easy. Also, note impervious ceramic tile, which denies insects a breeding place.

. . . But Are You Hitting

Sharp focus on often-missed harborages in structures, equipment, supplies.

TRUE, you may figure you know all the harborages and breeding places for insects and rodents in and about your plant.

Yet there are specific trouble spots in these areas that you may be overlooking. And such neglect invites serious infestation.

Actually, there can be double trouble. To quote from the FD&C Act (Section 402):

"A food shall be deemed to be adulterated if it has been prepared, packed, or held under unsanitary conditions whereby it may have become contaminated with filth . . ."

Our own underlining of the word "may" emphasizes that FDA can act against you without having to prove your food actually has been contaminated.

Thus, a plant's poor sanitation can trigger seizure and condemnation of goods, criminal prosecution, and injunctive action.

As an aid in eliminating potential sources of infestation, we will list some lesser-known plant harborages and outline preventive measures—particularly targeting walls, floors, ceilings, equipment, storage areas, and packaging supplies.

A. M. BREIMAN

Food & Drug Advisory Service, Elmont, L. I., N. Y.

1. Walls

Hollow tile and cinder block are common in food-plant walls because such construction is cheaper (in initial cost) than making walls of solid, reinforced concrete or metal. So long as tiles and blocks are effectively sealed on all sides, they present no serious sanitation problem.

However, trouble starts when sealing materials (cement, plaster, etc.) deteriorate, exposing hollow areas. These enclosed, hard-to-get-at spaces provide the shelter, security, and usually the warmth that rodents and insects seek for harborage and propagation.

Thus, avoid the use of hollow tiles and blocks for walls of new buildings. Solid concrete or metal are preferable in the long run.

In an existing structure, seal all holes, cracks, and breaks in hollow walls, using cement or a similar hard and permanent substance. Seal both inner and outer surfaces, after applying insecticide and rodenticide as a precautionary measure.

Electric fuse, switch, and transformer boxes are other potential vermin sources. They must be built for easy and safe cleaning and inspection, otherwise food dusts that

NON-PROCESSING AREAS, like this locker room, also get regular attention in well-coordinated sanitation program. Here, porter sprays insecticide with convenient hand-type unit.

All the Vermin Spots?

Expert advice on where to look, what to do

they collect will become insect infested. In time, these insects will migrate to other parts of the plant, thus complicating the problem.

Rodents, especially mice, also have been known to use larger electric boxes as temporary and permanent harborages.

Here's how you can prevent these troubles:

At least once a week, open all electric boxes for inspection and cleaning—consulting a licensed electrician to preclude the danger of electric shock.

Make the units readily accessible. A good arrangement would be a box with a front metal plate that covers the entire inside area, and is held in place by a few threaded bolts.

Where possible, seal all openings to keep food and other materials from falling in.

Electrical conduits and pipes should never be installed closer than one inch from a wall, otherwise foods collect between the two surfaces—another source of infestation. Of course, any matter that accumulates on conduits and pipes anywhere in the plant must be removed regularly and often. Use of insecticides in these areas is also recommended.

Many plant supervisors try to dress up their walls inexpensively by nailing or glueing 'imitation tile' wall sections on the rough surfaces. Since such materials never meet flush with all of the wall area, spaces between these surfaces make excellent places for insects and, in some cases, rodents. These spaces also become filled with food dusts, which cannot be easily removed because of the difficulty of getting behind the wall sections.

If tile surfaces are desired, and they have many advantages in food plants, use only ceramic or stainless-steel tiles. They should be applied by skilled tile-setters.

As buildings age and settle, cracks and openings frequently develop in walls, and in angles where wall and floor meet. It is vital that such defects be sealed promptly.

Quarter-round wood molding is sometimes used to seal spaces at the base of a wall. However, this practice is not recommended because minute crevices that remain will harbor insects. The best solution is to install ceramic tile coves at the wall base. Then no materials can collect, and corners are easily kept clean.

2. Floors

Electrical conduits should be buried when floors are made of concrete. If floors are of wood, run lines overhead to prevent accumulation of food dusts between floor and conduit.

Occasionally, firms have been required to cover conduits on the floor for employee safety. Some have met this requirement by placing curved metal plates over conduits. These miniature 'Quonset huts' are excellent rodent and insect harborages, thus should not be used.

Floor drains facilitate plant sanitation in processing areas. In time, such rooms may be converted to storage, or other non-productive use, and the drains are then ignored. But they are soon rediscovered by vermin as good living quarters.

If drains are not to be used again, fill them with cement so that the top surface is flush with the surrounding floor.

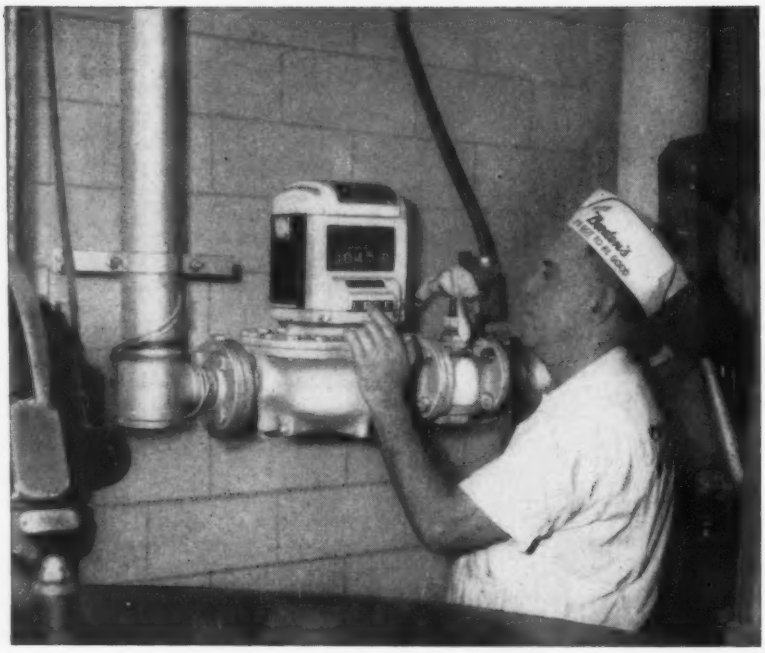
When drains are in regular use, they should be accessible for periodic cleaning of inside surfaces. Occasional application of insecticide is urged, since flies, roaches, and other insects, also like to frequent floor drains.

Wood storage pallets, and other materials that remain in one spot too long, may also harbor rodents and insects. Completely clear and clean all floors at least once a month.

3. Ceilings

Repair all ceiling breaks, cracks, and crevices promptly to prevent insect infestation of accumulated food matter.

Cocoa and meal moths have been



For better taste control
Borden uses

NEPTUNE *liquid* METERS

Borden's ice cream earns repeat sales because its good flavor never wavers from batch to batch. By measuring exactly the right amount of corn syrup into the mix, Neptune meters help insure uniform, well-flavored ice cream.

Borden's saves handling heavy bags of corn syrup solids, too, and improves plant housekeeping as well as employee morale . . . extra bonus values from their Neptune meters. The operator simply pushes the buttons to set the quantity required . . . opens valve . . . and the meter shuts off at the predetermined quantity.

Hundreds of plants now depend on Neptune meters to handle over 150 liquids — hot or cold water, soap solutions, oils, syrups, brines, many chemicals, etc. Sizes: ⅝ to 6 in. Capacities: 2 to 1000 gpm. Automatic ticket printing also available.

Neptune meters can benefit your operation wherever liquids flow. Send for free, helpful Metering Bulletin 567-CF.

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known to lay eggs in angles where ceiling and wall meet. So clean all ceiling areas often and regularly.

4. Equipment

When a machine or utensil is temporarily taken out of production, clean it thoroughly to dislodge all food residues. If it is permanently out of use, remove it from the premises after cleaning.

Old conveyor belts, for example, often are rolled up and stored in some dark corner, never to be used again. Later, an official inspector may find these belts teeming with insects, to the great surprise and chagrin of the plant owner.

A well-meaning operator may cover wooden machines and utensils with metal, even stainless steel, in the belief that he has converted them to sanitary units. Actually, he has created new headaches for himself and his sanitation staff.

For spaces between wood and metal surfaces are ideal breeding places, and when allowed in processing units or utensils, they come dangerously close to your foodstuffs. Contamination of products with insect filth may very well result.

All food equipment should be of one solid material, preferably clean, smooth metal, such as aluminum, steel, and bronze.

Hollow bases of such units as dough mixers and chocolate melters must be readily accessible for cleaning and inspection. A hollow base that cannot be opened invites rodents and insects to move in with safety.

As a matter of common sense, all parts of food machines and utensils must be readily accessible, or properly hinged or bolted clean-out doors must be provided.

Frequently, units are placed on wooden or hollow metal legs to achieve the most efficient working height. Such supports make good vermin harborages because they are hard to clean. If height of a machine must be altered, use smooth steel angle irons or solid bars as supports.

Generally, it is advisable to apply insecticide to all floor areas directly under machines.

Storage skids and pallets, especially those used for flour, chocolate, and nuts must be cleaned often. Skids and pallets that are cracked, rough-surfaced, or broken should be properly repaired or discarded.

5. Closets

Overcrowding of closets makes proper cleaning and inspection im-

For more data, circle 274 on Reader Service Card

possible. They should be emptied completely and cleaned at least twice a month. Paradoxically, rodent excreta is often found in closets housing a plant's cleaning supplies and equipment!

Packaging Supplies, Too

Although packaging materials are seldom connected with sanitation problems, it is surprising how often live roach nests are found in knocked-down cartons, also cocoa and meal moth pupae inside of set-up boxes. Sometimes these insects originate in the food plant, or they may enter the plant with delivered supplies.

In the latter case, bring this matter to your supplier's attention at once, so that he may take necessary action. While his plant is not subject to FDA or local health-department inspection, he is very conscious of his responsibilities as a supplier of clean goods.

When such insect trouble originates in the food plant, it is usually caused by an oversupply of packaging material that has been on the premises for some time. Any saving gained in buying unnecessarily large quantities is lost in combating the vermin problem that may result.

Finally, all packaging and shipping employees must be properly instructed and supervised to insure that no food goes into rodent- or insect-damaged containers. —*End*

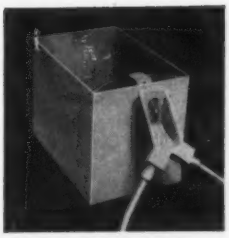
For Free Reprint of this article, circle Key number A2 on Reader Service card at back of issue. Additional copies may be purchased at cost of 25c. each for less than 20; 25c. each for 20 to 50; 15c. each for more than 50.

"That's even better'n it looked on 'Medic'! . . . So remember: When the FDA inspector comes in . . ."

Oakite introduces new chain lubricant . . . now offers you ***Conveyor-Matched Lubrication***

Picking exactly the right conveyor-chain lubricant and dispenser is a big step toward running a fast, smooth production line. It's a case where choosing well means using well.

With the introduction of a new chain lubricant, LC 106, Oakite expands your choice full range—enables you to select a lubricant with the right 'slip' necessary for avoiding motor burn-outs, bottle chatter, product breakage, chain drag. And you save maintenance time, too, because every Oakite lubricant cleans as it lubricates.



Oakite Chain Lubricator
Water feeds into top, dissolves lubricant, flows through drip tubes to conveyor surfaces.

Which chain lubricant is best for you?

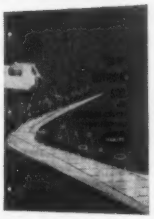
Oakite No. 6: Neutral, soap-type, jelly-like. Used in solution with water. May be pre-mixed or diluted on application. Has earned an excellent record in food and beverage plants.

Oakite No. 12: Non-soap, medium bodied, liquid lubricant featuring good hard water tolerance. Ideal for use where product spillage is acidic.

Oakite LC 106: Formulated for use where 'solid' type lubricant is favored over a pre-mixed solution. Slow-dissolving, maximum mileage, paste type.

Oakite Formula 59: Neutral, medium-bodied, oil-type, for outdoor use in cold climate. Mixes with water to form a stable emulsion. Will not gum or cake in sub-freezing temperatures.

Oakite Roller Lubricator
Available in 2 types. For bottle chains, steel roller deposits pre-mixed solution on chain. For case chain, lubricator sloshes solution over chain; when chain stops, lubrication stops .



In selecting a dispenser, too, Oakite can help you make the right choice. Call your local Oakite man, or write for free illustrated folder on chain lubrication, No. F10347. Address Oakite Products, Inc., 26G Rector Street, New York 6, N. Y.

Oakite Drip Tank
Petcock releases solution. No water connection required. Dispenses pre-mixed lubricant solution.

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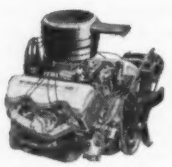
CHEVROLET L.C.F.'s ARE DESIGNED FOR LONGER LOADS—LONGER LIFE!

Compact Chevrolet Low-Cab-Forward design pays off in many ways; lets you pull long 35′ trailers and big-profit payloads, for instance. And the deep-down ruggedness of these heavyweight L. C. F.'s pays off, too — in lower hauling costs over the years.

Chevrolet L.C.F. tractors are *compact*—only 89¼″ long from bumper to back of cab! They enable you to pull a huge 35′ trailer while keeping overall truck length to less than 45′. And Chevy L.C.F. design means good weight distribution for bigger load capacity . . . provides short wheelbase that makes maneuvering a breeze . . . and assures easy servicing because of quick access to engine. Chevrolet L.C.F.'s with these special advantages come in a wide range of models, with G.V.W.'s up to 25,000 lbs.—G.C.W.'s up to 48,000 lbs. And they're *all* equipped with these husky long-lasting heavyweight components:

Newest big-truck power

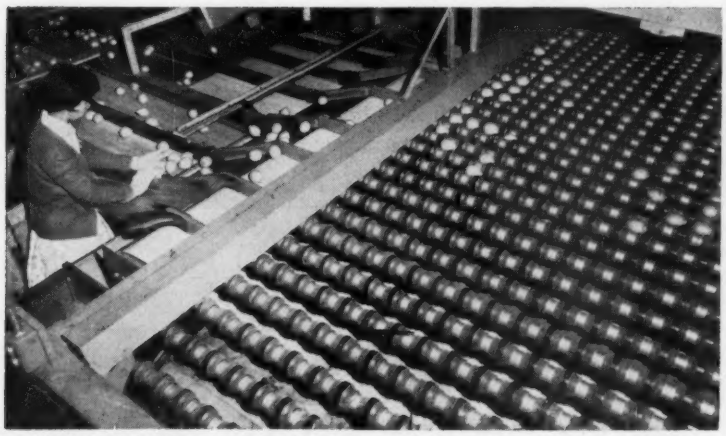


Revolutionary Workmaster V8, with 230 h.p., 335 ft.-lbs. of torque and radical Wedge-Head design is ready to save you many extra hours and dollars in a Series 90 L.C.F. Modern 160- to 175-h.p. Taskmaster V8's give top-notch performance in Series 50, 50H and 70 L.C.F. models!

True big-truck chassis

Big Chevrolet or Eaton single- or 2-speed rear axles up to 18,000 lbs. capacity . . . modern New Process or Spicer transmissions . . . Full-Air brakes . . . Cast Spoke wheels . . . heavy-duty components such as these make new Chevy L.C.F.'s the trucks best able to beat big jobs! Your Chevrolet dealer has one for *you*. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

CHEVROLET **CHEVROLET TASK·FORCE TRUCKS**



MOVING ROLLS of company-designed grader form fruit-carrying pockets that gradually expand for highly accurate size selection.

Sizes 3,800 Lemons a Minute

Specially designed for difficult oblate produce, new unit ups grading efficiency, cuts labor

ACCURATE SIZE-GRADING of oblate produce by diameter and length is a complex problem, particularly when it has to be done at very high speed.

At Sunkist, we were concerned with lemons, for which average diameter variation between commercial size grades is only $\frac{1}{8}$ in. for fruit of the same eccentricity (ratio of length to diameter).

But the greatest difficulty was handling a rapid flow of fruit with varying eccentricities.

We solved it with a company-designed unit (photo above) that grades according to actual fruit dimensions. A particular feature of this design is the moving sizing rolls that form gradually expanding pockets for the lemons. As a result, the unit—

1. Achieves highly accurate size selection of up to 230,000 lemons per hour.

2. Replaces five women formerly required just to check sizing accuracy.

Visual size-grading, on the other hand, is not only much slower but is subject to errors caused by optical illusions. For example, a round lemon and an oblong one are visually difficult to compare as to volume. But this is no problem for the mechanical grader. Here is how it operates:

Incoming fruit is singulated on a sloping conveyor, then oriented to drop into the unit's individual pockets. Latter are formed by design of the sizing roll's spindle-like projections, four opposing sides making a pocket.

As rolls progress along grader frame, their interstices or "valleys" are mechanically expanded to enlarge the pockets. Small fruit drops through first, larger lemons later as inter-roll space widens. Conveyors below the grader catch the various sizes and move them to packing stations.

To prevent overloading, unit has a design capacity $2\frac{1}{2}$ times that of existing equipment. Thus, it accommodates one rail car per hour.

Sizing rolls are powered by two conventional roller chains equipped with cam followers, which form triangular linkages at appropriate points along the chain. Depth of cams, or tracks, determines positioning of linkages which, in turn, gradually increases the valleys between the sizing rolls.

Unit has a 3-hp. fluid drive, and can discharge up to five valleys per second.

M. JOHNSON, JR.
Engineer, Field Laboratory,
Sunkist Growers, Inc., Los Angeles

"WE'VE FOUND THIS LUBRICANT BEST FOR FISH PROCESSING MACHINERY"

says HIGH SEAS Tuna Packing Co., Inc. of California

"We have used LUBRIPLATE Lubricants for over 15 years and find they do everything. They keep fish processing machinery from seizing and keep it easy to take apart and reassemble. This is very important in food processing plants. Because LUBRIPLATE Lubricants are so effective, economical and long-lasting, they save us time and money."

Earl Lockhart
Master Mechanic

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

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To Freeze Quality Birds Economically—

Circulate Brine . . . . . For Best Freezing Rates

Velocity (Ft./Min.)	Freezing Time, ½-In. Depth (Min. at 0F. & 10F., Respectively)*		Freezing Time, Various Depths (Min. to 1, 2, 3 In., Respectively)**		
0	50	88	120	260	672
52	39	44	104	218	301
84	29	34	82	181	245

*White turkey hens, 14-16 lb.
**Large bronze turkey toms.

Strides in Immersion-Freezing of Poultry

Latest research reveals its quality-control and cost-cutting benefits. Here's the 'how' of it

TWO PRIME ADVANTAGES of immersion-freezing have greatly interested poultry processors—particularly for those handling turkeys:

1. Sure Quality Control: Birds retain their attractive white appearance, the one quality factor the consumer can really judge before purchase.

2. Higher Operating Efficiency: Freezing takes place right in the liquid heat-exchange medium, which has a higher heat-transfer coefficient than air. In addition, the method lends itself to a line-type operation.

To further pinpoint the process variables, eviscerated packaged turkeys were frozen in an experimental immersion unit at Purdue's Department of Poultry Science.

Here our research confirmed the contention that turkeys can be frozen, satisfactorily and economically, in immersion units—provided that liquid velocity exceeds 50 fpm. However, there are two precautions:

A skin-tight package must be used to avoid skin blotches, which form under air pockets.

And the film must be completely water-tight to prevent the freezing solution from contacting the product.

If a bag breaks, remove the bird, rinse it thoroughly, and repackage. Then be sure the wrap is completely evacuated before it is heat-shrunk. Otherwise, bag breakage may result from rapid expansion of air in the cold body cavity.

All birds used in the freezing study were subscalded, dressed, eviscerated, and cooled to 35-37F. in slush ice before being vacuum-packed in heat-shrinkable film. Primarily, we determined what effects temperature, freezing medium, liquid velocity, and bird size had on freezing time and color retention.

Brine Gives Fast Freeze

At comparable temperatures, saturated sodium-chloride solution transfers heat about twice as fast as 45% ethylene glycol. Brine is highly corrosive and starts to 'salt out' at −4F., but is relatively cheap and readily available.

In commercial freezing, propylene glycol would be used instead of ethylene glycol, which is toxic. However, their heat-transfer rates are about the same. Glycol does have an advantage over brine in that it can be used at much lower temperatures.

How temperature, depth of freezing, and liquid velocity affect freezing rate is shown in our table.

There is a significant negative correlation for birds frozen to a depth of ½ in. at 0F. and 10F., temperature having no appreciable effect on freezing time when liquid velocity exceeds 52 fpm. However, when birds were frozen to a depth of 3 in., brine velocity was highly significant.

Thus, whether turkeys are to be frozen, completely or just to ½-in. depth, agitation is required to get practical freezing rates.

There were no appreciable color differences between birds in either group, except for those frozen at 10F. in still air. Their surface color was not uniform.

To further check color retention, a panel judged birds that were frozen at 0F. for 15 to 120 min., then stored in a still-air freezer (−6F.) for 24 hr.

Concensus was that 15 min. in 0F. brine insures retention of optimum color if birds are stored immediately at −6F.

For turkeys in the weight ranges studied (19 to 25 lb.), size of the birds didn't significantly affect their freezing rate. What variations did occur probably were due to a combination of factors—weight, surface area, and fat content. However, variation of freezing rate might be significant for a group of birds with greater weight differences.

Finally, optimum color development and surface hardening can be accomplished in 2 min. in freezing solutions below 5F. At higher temperatures, however, it would take at least 3 min. to produce a shell firm enough to withstand color change.

This article is based on Journal Paper No. 1226, Purdue Agricultural Experiment Station. Research was supported, in part, by grants from Cryovac Co., Cambridge, Mass., and Barker Poultry Equipment Co., Ottumwa, Iowa.

J. D. MITCHELL, J. W. DODGE, W. W. MARION, and W. J. STADELMAN
Department of Poultry Science, Purdue University, Lafayette, Ind.

The Arithmetic of Materials Handling

Developed by Fuller, American Sugar's new Airveyor Bulk Transport Trailer permits high speed, low cost loading and unloading of Domino sugar.

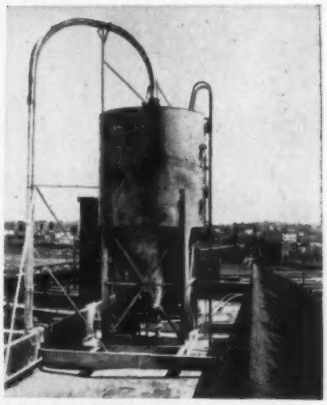
AMERICAN SUGAR DELIVERS IN BULK WITH NEW FULLER AIRVEYOR® TRANSPORT

When American Sugar Refining Company recently turned to Fuller-Airveyor Bulk Transport Trailers for delivering sugar to the Long Island City plant of Louis Sherry Preserves, Inc., they not only eliminated bag-handling, but also did away with lift trucks, scrolls, bucket elevators, and many wasted man hours.

One man now unloads 30,000 pounds of Domino bulk sugar in less than a half hour — and stores it 150 feet away. The Airveyor Bulk Transport Trailer does all the work. Waste and contamination are eliminated.

Fuller Airveyor Bulk Transports, like this, can be designed and built for a wide variety of dry, finely divided and coarse granular materials from powders to pellets: sugar, starch, malt, grain, and lime, to mention only a few. The only investment required by a customer to receive material pneumatically is a storage bin and two pipe lines.

If you are now handling dry, granular materials, it will pay you to look into Fuller pneumatic conveying systems. Fuller systems are engineered specifically for your particular application. They bend around corners, run up or down, through walls and floors, almost any distance — even underground. Write or phone today outlining your problem. Fuller will gladly furnish additional information with appropriate recommendations.



LOUIS SHERRY'S STORAGE BIN for sugar, 150 feet from truck, atop Long Island City plant.

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"See Chemical Engineering Catalog for details and specifications".

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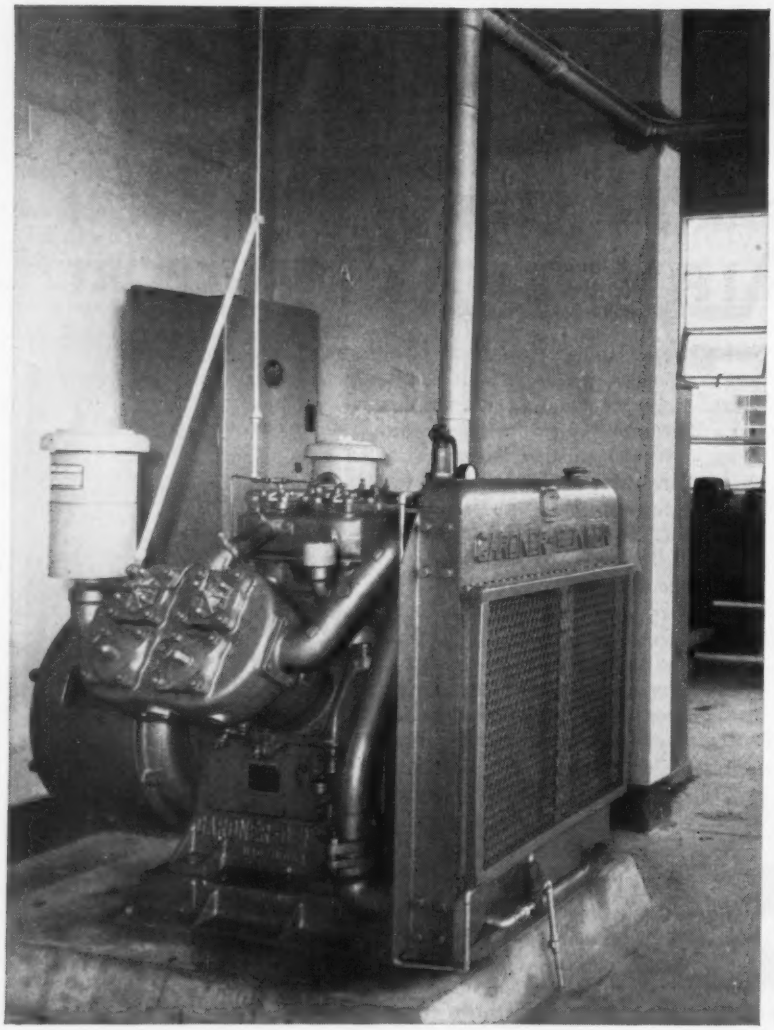
GARDNER DENVER

Compact and efficient, the Gardner-Denver WB supplies low-cost compressed air power from a small corner of your plant. The "W" design saves floor space. Balanced high- and low-pressure cylinders eliminate vibration and the need for expensive foundation. Pump circulates cooling water around cylinders and separate valve chambers. That's the story of WB quality. Want details? Send for Bulletin WB-10.

Stationary air compressors . . . tank-mounted compressor outfits . . . oil-free air compressors . . . whatever your compressed air needs, see your Gardner-Denver compressor specialist first. Gardner-Denver Company, Quincy, Illinois.

Compact . . . efficient

WB Two-Stage Compressor



For Beverage

Just approved for use in beer and wine, new precipitating agent ups quality, cuts processing costs . . . See wide application to non-alcoholic beverages

FEDERAL APPROVAL of a potent clarifying agent for beer and wine offers the food industry a new remedy for beverage cloudiness.

The material, polyvinylpyrrolidone (PVP for short) efficiently precipitates tannic acid, also certain tannins and polycarboxylic acids. To date, its use has been approved only by the Alcohol & Tobacco Tax Div. and, thus, only for beer and wine.

However, PVP shows considerable promise as an effective precipitant in grape and apple juices, jellies, vinegar, cider, coffee, and tea. Of course, any application to a non-alcoholic beverage must await FDA approval.

Product is offered under the tradename "Polyclar" by General Aniline & Film's Antara Chemical Div., New York City. It is a stable, odorless, and tasteless solution (20% active ingredient).

Many Benefits in Beer

First food use of PVP will undoubtedly be in beer, for which it offers the following advantages:

1. **Improved taste, foam retention, and stability to light.**
2. **Hops savings up to 20%.**
3. **More effective chillproofing.**

In brewing, certain tannins complex with proteins to form compounds having borderline solubility in beer. Often, they are soluble in warm beer but precipitate when the brew is chilled. The resulting cloudiness is called 'chill haze'.

Proteolytic enzymes, which degrade the protein fraction of the tanning complex, have commonly been used to eliminate chill haze. They either prevent a precipitate from forming or, if it has already formed,

*** Short for the versatile synthetic high polymer, *polyvinylpyrrolidone***

For more data, circle 279 on Reader Service Card

Clarity—PVP*

render it soluble. It's said, however, that this technique is not entirely satisfactory in that 'protein regeneration' can occur, permitting reprecipitation. Beers thus processed may have storage life of only a few months.

PVP, on the other hand, is said to selectively precipitate the small percentage of total tannins that cause chill haze. With those tannins permanently removed, the finished beer is markedly stable in storage. Plant runs with PVP have resulted in beers that reportedly remain brilliant after ten month of storage.

In use, PVP is preferably put in the boiling wort after the last addition of hops. As the wort cools, a precipitate known as the 'hot break' forms. Although precipitation occurs at this point whether or not PVP is used, the volume is much greater with PVP. During subsequent cooling another precipitate, called the 'cold break,' forms. Considerably less of the second deposit is obtained with PVP-processed beers, thus a cleaner wort results.

The cold break also adsorbs some of the flavoring agents imparted by hops. Since use of PVP minimizes the volume of precipitate, it curbs loss of flavor. As a result, quantity of hops used may be reduced by 15-20%.

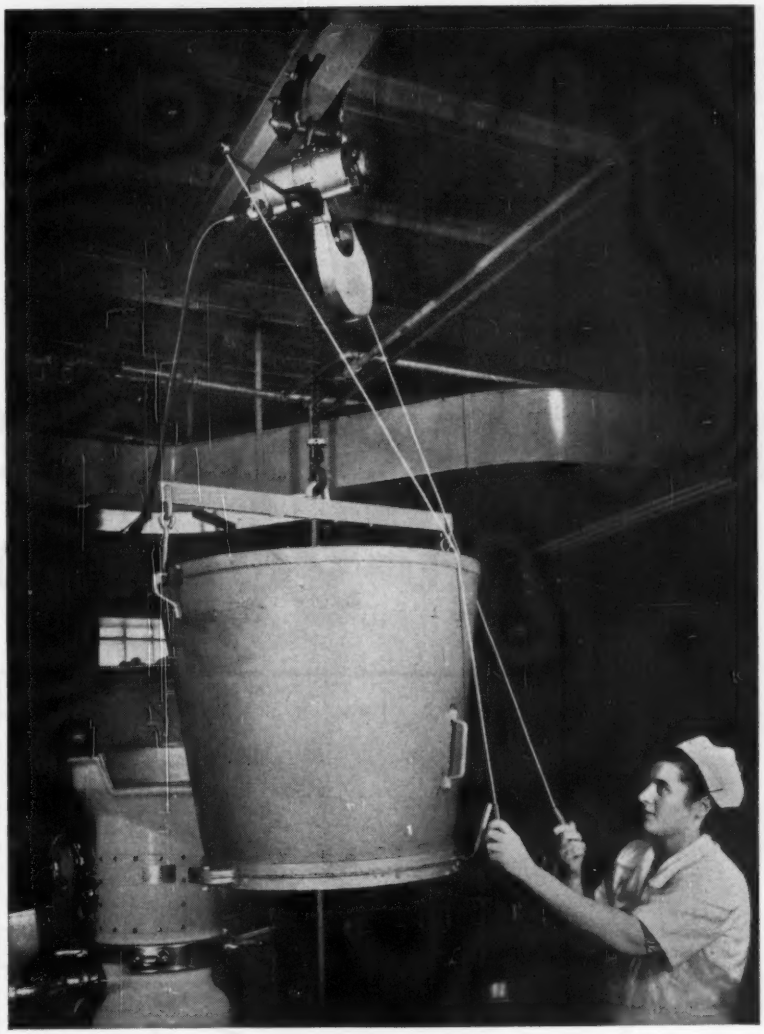
Focus on Wine Use

When used as a clarifying agent in wine, PVP acts much as it does in beer.

In blackberry wine or port, addition of PVP causes precipitation proportional to the amount used, up to a certain concentration. Then further addition of PVP decreases the volume of precipitate and eventually, no precipitate forms.

The best PVP concentration is not necessarily that which produces the largest precipitate. Rather, it is the amount that gives optimum taste, stability of taste, and clarity to the finished wine. Apparently, it can be used at any stage of manufacture, although further research may reveal an optimum point.

Re Toxicity: A comprehensive chronic oral toxicity study, undertaken by General Aniline & Film, indicated no untoward effects on rats whose daily diet for two years contained 10% PVP. —*End*



Air-borne food hopper
saves muscle and minutes

This plant uses a Keller ½-ton air hoist to keep a stuffing machine supplied with sausage meat. It hoists the heavy hopper into dumping position quickly, and air and finger muscle do all the work.

Keller air hoists use air power efficiently, work under most adverse conditions without costly down time and maintenance. They're fast, safe, easy to operate. Capacities from 150 lb. to two tons. Write for Bulletin 86-1.

ENGINEERING FORESIGHT—PROVED ON THE JOB
IN GENERAL INDUSTRY, CONSTRUCTION, PETROLEUM AND MINING

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

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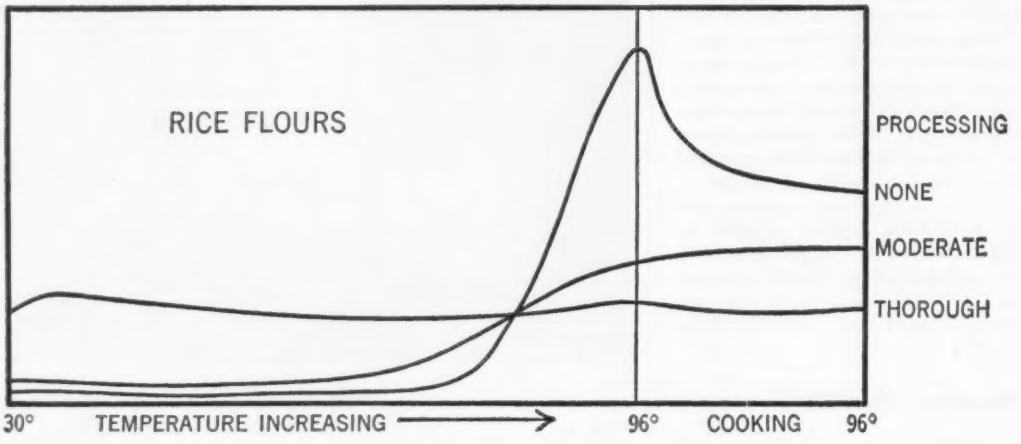
NOW! From The Quaker Oats Company...

Flours PREGELATINIZED to fit your needs



EXAMPLE: The above amylograms illustrate the effect of varying degrees of thermal treatment upon the cooking characteristics of rice flour. Raw rice flour thickens rapidly but is followed by appreciable "Set-back" upon extended cooking. Thoroughly processed rice flour hydrates well in cold water and maintains its viscosity throughout the heating and cooking cycle. Quaker can supply rice flours with any degree of processing within these limits.

Now Quaker can supply you with flours pregelatinized to fit your processing needs.

Quaker's control over gelatinization combined with special grinding and drying techniques can provide corn, barley, rice and wheat flours which thicken rapidly upon heating or which exhibit very little viscosity change during heating.

Pregelatinized, low bacteria flours or meals may shorten the processing time required to produce commercially sterile canned goods. They may also reduce the time needed for cooking, gelatinizing, or dextrinizing.

Quaker will help you select the type of flour and the degree of gelatinization best suited to your products. For information on this service, write to address at right.

QUAKER

Industrial Food Sales Department
The Quaker Oats Company
Chicago 54, Illinois

For more data, circle 281 on Reader Service Card

Oxygen Bomb Method Speeds Fat Tests

An improved Oxygen Bomb technique for determining oxidative stability of fats, oils, and fatty foods permits a significant increase in number of products that can be evaluated and, also, speeds the test.

Key to the new technique is use of a dispensing agent (any cellulosic material having complete inertness under test conditions) which greatly increases reactivity of product by expanding its surface area.—*Paper by B. N. Stuckey, presented at Amer. Oil Chemists' Soc. meeting, Memphis,* April 23, 1958.

Importance of Heat In Oil Stability

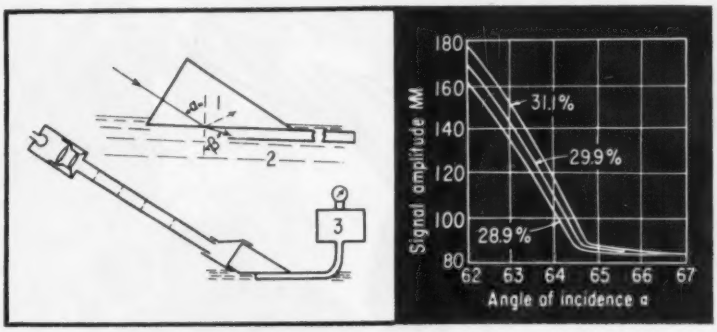
Heat is essential to the effectiveness of metal-inactivating agents in vegetable oils.

This is the conclusion reached in studies on oxidative stability of corn, soybean, cottonseed, and peanut oils when treated with such metal-inactivating agents as citric acid, sorbitol, lecithin, and carboxymethylmercapto succinic acid.

Lecithin, for example, had no stabilizing effect on a commercially refined, bleached but undeodorized soybean oil. Some evidence of stabilizing activity was observed as the concentration was increased, but it was almost negligible when compared with the results obtained with oil that had been deodorized at 210 C. for 3 hrs.

Investigation suggests that trace metals in normal glyceride oils are held tenaciously within a complex of unknown structure. And although the metal is not available as an uncomplexed metallic ion, it still behaves as a strong pro-oxidant catalyst. Application of heat releases the metal so that it can be complexed with metal inactivators.

Release of the metal seems to be closely associated with breakdown of fatty acid hydroperoxides, suggesting formation of a complex between the metal and the hydroperoxide group or between the metal and the unsaturated linkage of the fatty hydroperoxide.—*J. Amer. Oil Chemists' Soc.*, 152–56, April, 1958.



Refractometer For Process Control

A new unit that enables automatic control of dry material in tomato pulp within ±1% has been described in the Russian publication *Zavodskaya Laboratoriya* 23(9), 1124, 1957.

Instrument differs from conventional refractometers in that light travels through glass prism (1, left diagram) before entering the solution to be tested. Then it is incident on boundary between glass and trial solution.

Since optical density of solution is less than that of glass, angle of refraction β is greater than angle of incidence α. Angle α is so chosen that, with insufficient concentration of juice, ray of light is completely reflected internally.

At a certain juice concentration, refraction takes the place of reflection, light ray penetrates solution, and enters light probe (2) then travels to photoreceiver (3), where amount of light is recorded. Photoreceiver uses 19 cascade photomultipliers with stabilized current supply at 2,100v. Incident angle α may be used for preliminary tuning to obtain maximum signal near required concentration.

A 6v, 20w bulb is used as light source, with a lens to focus and direct it through a 350 mm. long tube. Tube has series of diaphrams that reduce light reflected from its wall. Inoperative surfaces of the prism are coated with non-transparent varnish to keep out extraneous light that might affect readings.

Final photomultiplier operates a mirror galvanometer, and angle of rotation of this unit may be used to regulate process.

Results of preliminary tests with tomato pulp are shown in graph above. There is a sudden reduction in signal as angle of incidence increases, and the instrument can be adjusted to obtain maximum sensitivity to change in concentration within the working range.—*Food Manufacture*, 203, May 1958.

Variations in Temperature Cut Concentrate Counts

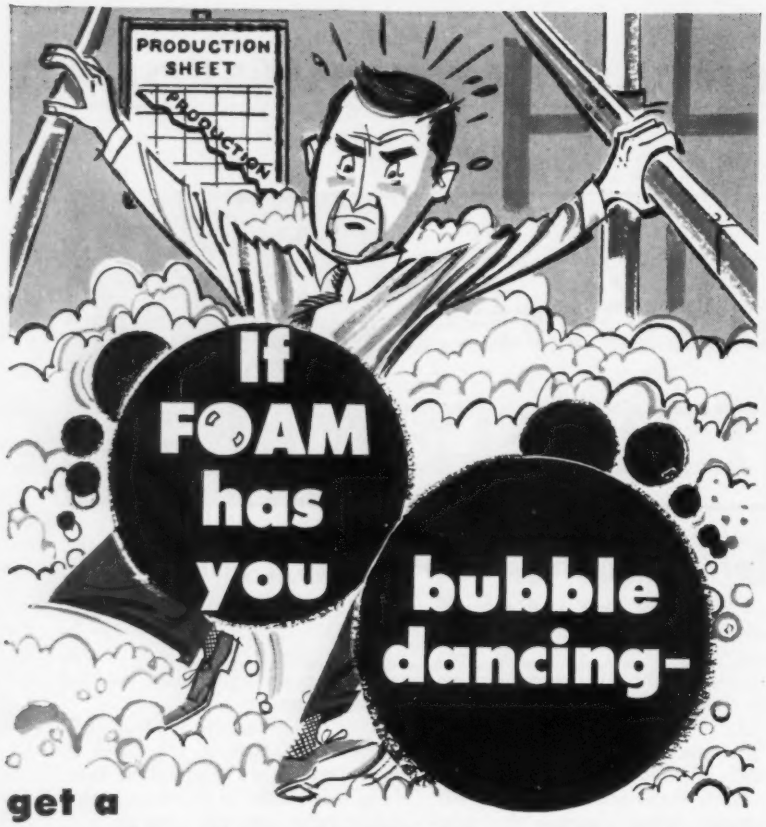
Low plate counts on frozen orange concentrate may be the result of unfavorable time and temperature storage conditions, that are deleterious to juice quality. This was indicated in tests made on samples from 5 lots of California juice manufactured in the 1952–1953 season.

During storage, juice was subjected to time-temperature exposure cycles similar to those that occur in cold storage warehouses. Samples had counts of 176,000, 89,000, 290,000, and 220,000 per ml. initially.

Concentrates stored at −10 F. for the 9-month test period averaged 36% survival; at −80 F. survival was 86%.

Greatest reduction in bacterial numbers followed exposure to 20 F. for 14 days, followed by 7 days at 40 F., after which only 2.6% of the original bacteria survived.

Coliforms were found in 4 of the 5 lots at start of the tests, but they were practically eliminated by storage conditions. While storage above 0 F. seemed to be beneficial as far as bac-



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terial content was concerned, other unfavorable reactions occur, such as loss of cloud, and flavor changes.—*Applied Microbiology*, 6(2), 139–341, 1958.

Make Canned Ground Meats Like Unground Products

Addition of controlled amounts of albumin and gelatin to comminuted canned meat is said to give the product a texture and sliceability substantially the same as that of the uncanned meat.

Neither additive is effective by itself. Both must be used to accomplish the desired result of firmness and moistness essential for texture and taste preservation. And addition of a small amount of meat broth and salt is desirable.

Gelatin is used in amounts ranging from 2.5-5.0 parts by weight of the meat composition prior to canning. Ratio of albumin solids to gelatin may vary from 1:1-4:1, with an optimum of 2.8:1.

As an example of the process, equal quantities of boneless beef rounds and chucks were boiled and ground. Salt was added to the broth which was poured over the ground beef. Gelatin and dried egg albumin were successively mixed with the meat, yielding a composition of 81.75% beef, 8.50% albumin, 3.00% gelatin, 5.00% broth, and 1.75% salt. The mixture was vacuum-packed in silicone-parchment-lined cans, processed in steam at 240F. and stored.

On opening after several weeks storage the meat could be sliced at any desired thickness and had a texture and flavor closely resembling that of fresh roast beef.—U.S. Patent 2,822,276, Feb. 4, 1958.

Dry Fondant Mix

Procedure has been patented for making a dry granular fondant, avoiding the disadvantages of previous methods and yielding a product of superior characteristics.

Method involves mixing pulverized granulated sugar, and a cooked water solution of granulated sugar and invert sugar.

First material is pulverized so that all particles will pass a 400-mesh screen. Most of the particles should range from 0 to 40 microns, with not more than 10% larger than 40μ.

Second material is made by melt-

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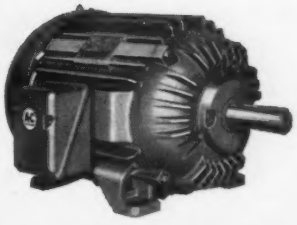
For more data, circle 283 on Reader Service Card

long-run power by Allis-Chalmers

Newly applied food process uses Allis-Chalmers motors

For better milling, here's a separation process to produce individual flours for specific bakery products. It's done by turbo-milling, developed by Pillsbury Mills. Allis-Chalmers motors furnish power for the turbo-grinders and separators which produce hurricane winds required for this reduction process.

Turbo-milling is only one of many long-run milling operations for which Allis-Chalmers motors have been selected to handle day-in, day-out performance requirements. What contributes to the long-run power in Allis-Chalmers motors? MORE stator protection; MORE use of iron; MORE cooling surface.



For the long run, specify Allis-Chalmers motors as new components or as replacements. Contact your A-C representative or distributor, or write Allis-Chalmers, General Products Division, Milwaukee 1, Wis.

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This air-cooled condenser gives you more capacity than other types at a substantial saving of steam and power. Water supply, scaling treatment and disposal problems are eliminated.

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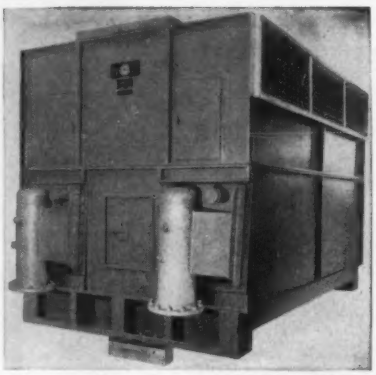

Niagara Aero Vapor Condenser Panel Casing construction gives access to all parts, saves first costs in shipping and installation.

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under extreme temperature changes

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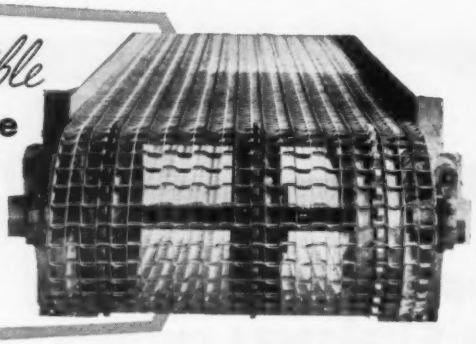

This long-wearing, open-mesh conveyor belting moves smoothly, through cookers and scalders to coolers and freezers, or vice versa, without distortion or change in flexibility. The strong, open-mesh construction, that assures a positive drive on the La Porte Sprocket, permits free circulation of air and liquids around products in process, also facilitates sterilizing with steam gun or scalding water.

Besides, this endless belt is a time and money saver in food packing, storing and shipping.

Available in ½" x 1" also 1" x 1" mesh in any length and practically any width.

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Advances in Technology

ing granulated sugar in water, withdrawing a portion for inversion, and returning it when inverted to the original melt. As an alternative, invert syrup may be added directly to the melt.

After cooking at 260–300 F., melt is mixed with the pulverized sugar. Mixture is agitated, cooled, comminuted, screened, and packaged with moisture content of less than 2%.

Product is quickly reconstituted into a moist fondant, and has improved characteristics as a cake icing. It contains no degradation products affecting color and flavor.—U. S. Patent 2,824,808, Feb, 25, 1958.

CO_2 Producing Mixture

Preparation of a stable, non-hygroscopic mixture for effervescent beverages is the object of an Italian patent.

Mixture comprises citric acid, $NaHCO_3$, and sucrose in approximately following proportions: 21, 26, 43. It can be produced in pill, granular or powder form, and is said to remain stable when stored in paper bags or cardboard boxes.—Ital. Patent 475,959 (assigned to Societa Prodoth Antibioticia, Milano).

Off-Flavors in Frozen Peas Traced to Added Enzymes

Addition of enzymes to blanched peas results in development of off-flavors following frozen storage that are similar to those occurring during frozen storage of raw peas.

Lipoxidase-treated samples were moderately off-flavored. Catalase and peroxidase produced only mild changes in flavor. Lipase-treated samples possessed disagreeable off-flavors, which must be attributed in part to flavor imparted by the lipase preparation itself.

Changes in green color were produced by addition of four of these enzymes. Lipase caused the greatest losses of chlorophyll, evidenced by formation of pheophytin.

Deterioration of lipids was caused by lipase and lipoxidase, resulting in large decreases in acid number and in development of peroxides.

A possible explanation of how lipase may function is suggested by the observation that samples containing both lipoxidase and lipase showed considerable amounts of oxygen uptake in absence of linoleic acid substrate. This effect was not apparent when only lipoxidase was present,

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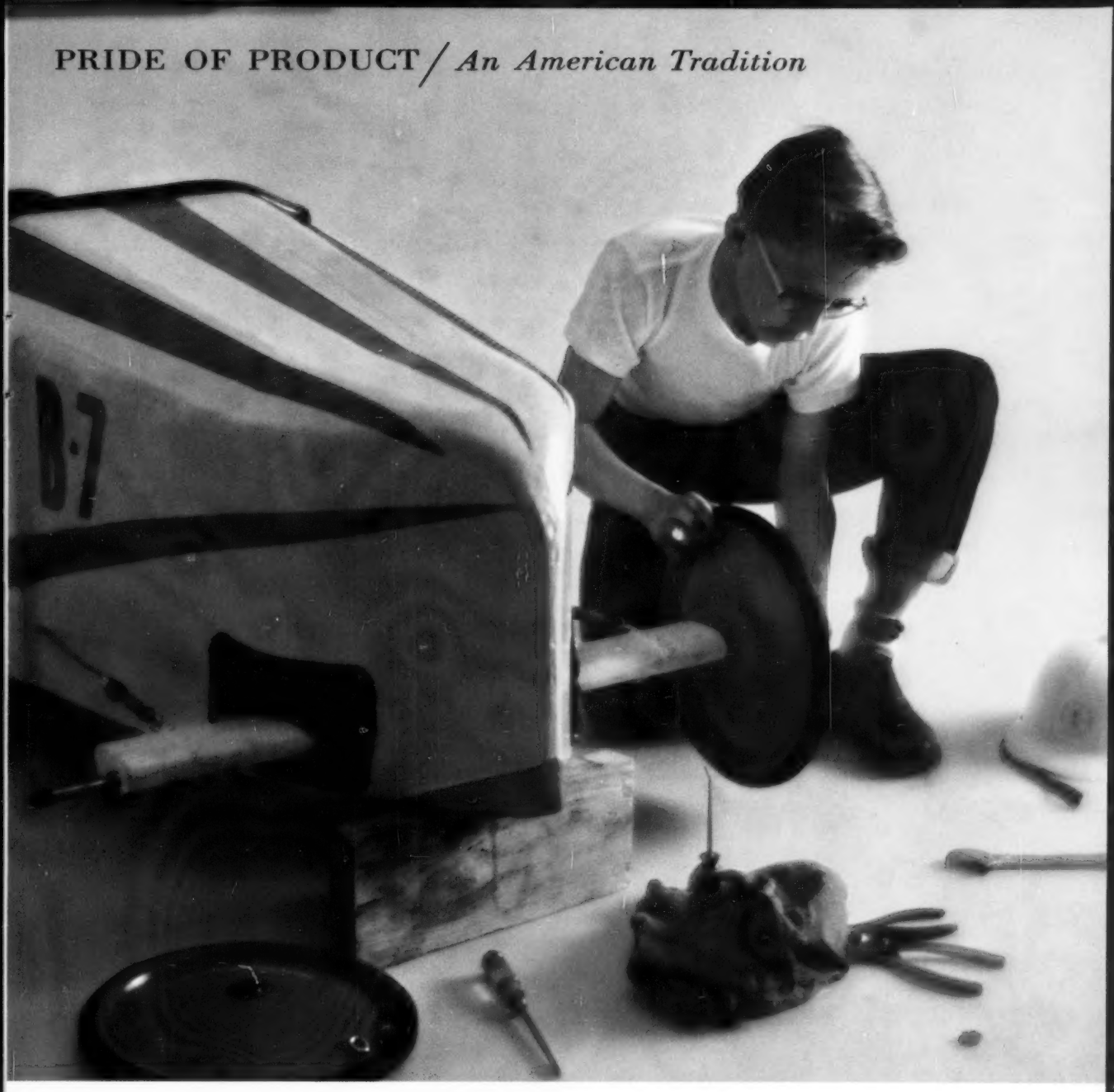

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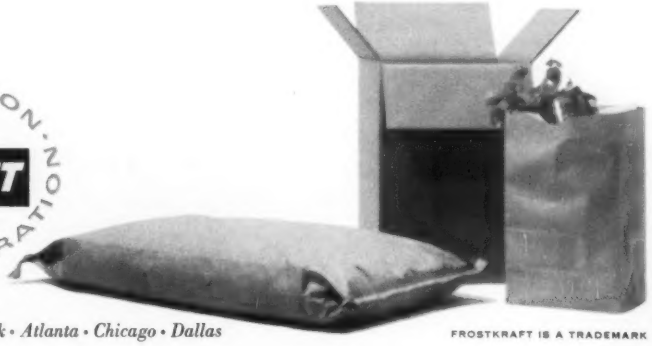

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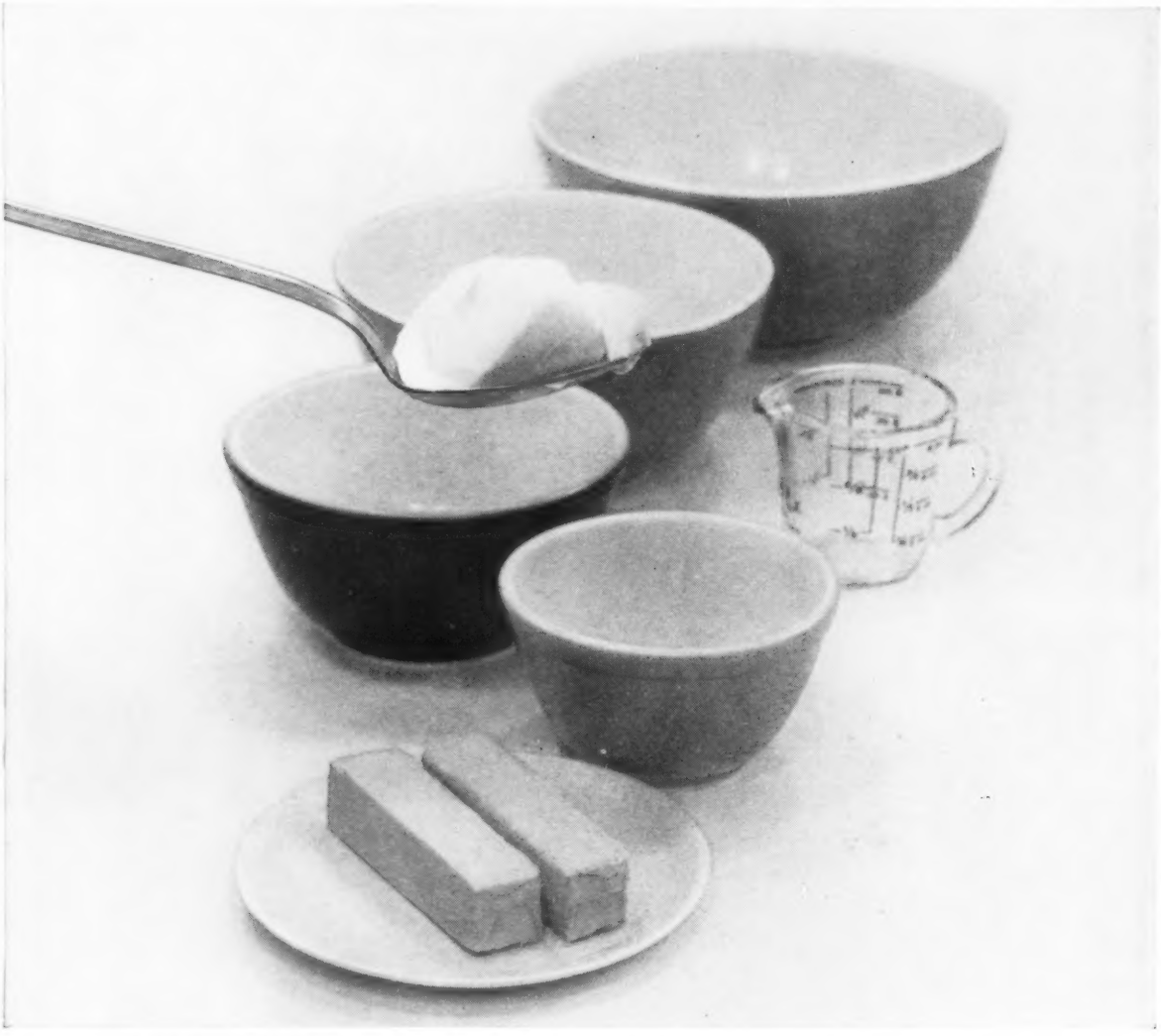

Who likes
Myverol® Distilled Monoglyceride emulsifiers?

The lady on the end of the spoon? Hardly. She never heard of them. Her interest in the shortening she uses extends only to how well it helps her bake nice, light cakes with good texture—and she hasn't the slightest interest in the *Myverol Distilled Monoglycerides* that help bring it about. Same with the margarine. She likes its creamy texture, how it tastes, how well it acts for frying.

The sales manager of the company that made these products? *He* probably knows about *Myverol* and likes the way it imparts qualities to his margarine and shortening that earn choice space on the market shelves.

The food engineer? He likes *Myverol* because it is so free from impurities that he can use it after deodorization without affecting the taste, odor, or color of his products. And he knows exactly how much emulsification he's imparting because it can be added *after* the deodorization process.

The control chemist? He likes *Myverol* because he can count on the uniformity of *Myverol* from shipment to shipment.

The purchasing agent? He likes *Myverol* because he finds his company spending less for this type of emulsifier. It is such concentrated mono that a little goes a very long way—much more than makes up for the slightly higher cost per pound.

Will you like Myverol Distilled Monoglycerides? The only way to find out is to try it. We make it from most fats and oils, will be glad to send you samples, furnish more information. Write ***Distillation Products Industries,*** Rochester 3, N.Y. Sales offices: New York, Chicago, and Memphis • W. M. Gillies, Inc., West Coast • Charles Albert Smith Limited, Montreal and Toronto.

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Distillation Products Industries *is a division of* Eastman Kodak Company

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not when catalase and/or peroxidase were present along with lipoxidase.—*Food Research*, 25–31, Jan.-Feb. 1958.

Molybdenum as a Lubricant

Since 1950 molybdenum disulfide lubricants have found a increasing use in the food field.

Their stability at temperatures up to 750F. in the presence of O_2 and steam, and resistance to acids and brines make them suitable for such applications as: Conveyors, can closers and fillers which are exposed to steam, hot acid juices or brine, and ovens, dehydrators and high pressure steam equipment.—*Food Preservation Quarterly*, 63, Dec. 1957.

How Tests Indicate Quality of Precooked Frozen Foods

Frozen pre-cooked foods need adequate quality controls, standards for flavor, attractiveness, stability, and wholesomeness.

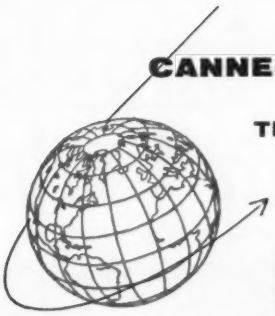
Level of bacterial population surviving in them is one measure of wholesomeness. As a result of studies on pre-cooked frozen tray and casserole meals produced for U.S. Air Force contracts, standardized methods of sampling and sample preparation were developed.

Disintegration of 1-in. blocks of the frozen food in sterile distilled water with a Blendor type of agitator is recommended. Suspension thus produced is tested for standard plate and coliform count, coagulase-positive staphylococci, and enterococci.

Medium used for standard plate count is milk protein hydrolyzate glucose agar, incubated at 32-35 C. for 72 hrs. Coliforms were counted on desoxycholate lactose agar after 18-24 hrs. at 37 C.

Coagulase-positive staphylococci were first enriched by culturing the suspension in trypticase soybroth containing 10% NaCl, followed by streaking on tellurite glycine agar.

Azide glucose broth was used in the tests for enterococci. Selenite F broth containing glycine, followed by streaking onto brilliant green agar and bismuth sulfite agar plates served for detection of *Salmonella*.—*Applied Microbiology* 6(2), 97–104, 1958.



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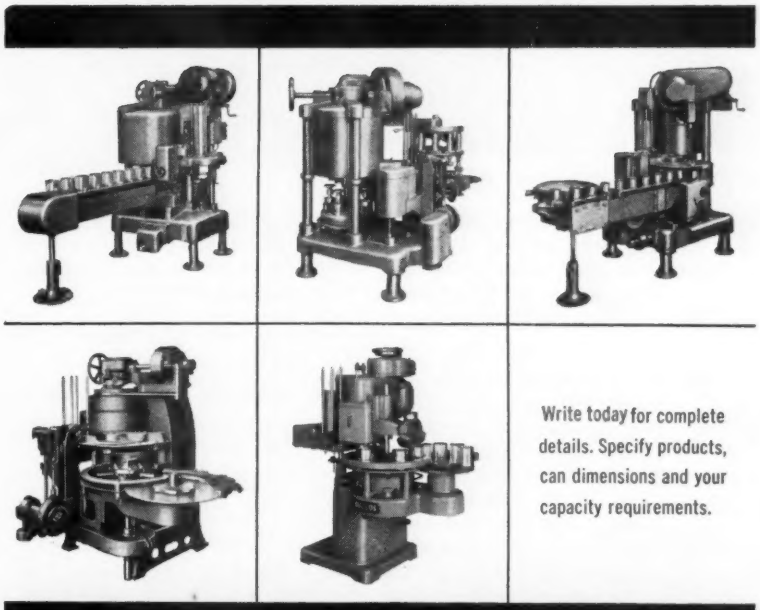

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A. P. Bergstrom, Chief Engineer, points out one of many Yarway Impulse Steam Traps in Horlicks plant to Yarway representative

Q. Mr. Bergstrom, as Chief Engineer here at the Horlicks Corp. plant in Racine, Wis., you use a lot of Yarway Impulse Steam Traps. Why?

A. Well, we take pride in our plant, and our production. We've got one of the most efficient power plants in the state, and our process plant operates 24 hours a day, 5 days a week, the year around, manufacturing malted milk. Our equipment must be dependable. This includes traps, too. In six years, only once have we had to repair a Yarway trap. We replaced a valve assembly and this took just a few minutes.

Q. How many Yarways do you use?

A. Probably 50 or 75. They're all over — on unit heaters and steam lines — and doing a fine job!

Q. Any other features you like?

A. Yes. Size is important. They do a big job in small space. They're easy to fit into our piping hookups.

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Brighter Appearance • Better Texture and Consistency • Finer and Fresher Flavor with EXCHANGE Products from Citrus

Exchange Pure California Lemon Juice

Lemon juice is nature's most effective anti-oxidant. It contains many organic reductants, including ascorbic acid and a rather broad group of phenolic anti-oxidants which fall under the classification of flavonoids, sulphydryl-like compounds and possibly flavonols, which act synergistically to give lemon juice its remarkable anti-oxidant properties. It discourages the growth of microorganisms, retards enzymatic action, prevents oxidative browning, reduces the pH of low acid foods and actually possesses the ability to enhance natural food flavor in many foods such as the natural peach flavor in freestone peaches. It is prepared by Sunkist Growers especially for industry use in baby foods, low acid fruits and vegetables, canned and frozen fruits, fruit juices and nectars, mayonnaise and salad dressings, sea foods in all forms, cured meats and wherever a problem of appearance or perishable flavor exists.

Exchange Citrus Pectin— Slow Set and Rapid Set

There is one tailored to your special need. They are used by more American preservers, confectioners, and food processors than all other brands *combined*. Guaranteed by Sunkist.*

Exchange Low Methoxyl Pectin— Pectin L. M.

The *only* pectin that forms a true jell without sugar. It is the exclusive choice for aspics, jellied fruit and vegetable salads, low calorie jams, and dietetic fruit jells. Guaranteed by Sunkist.*

Exchange Pure California Orange Juice

Gives your product more of the true fruit characteristics—because it is made from California oranges, known for their richer content of ascorbic acid, amino acids, polysaccharide complexes, B complex factors, carotene (pro-vitamin A), and aromatic flavor compounds. Prepared especially for the food and beverage industry. Guaranteed by Sunkist.*

Exchange Frozen Lemon Puree and Exchange Frozen Orange Puree

Both purees of whole lemons and oranges (seeds removed) are standardized in juice acidity, sugar content and flavor. Purees give a like-fresh tangy taste to food recipes and beverage formulas. Guaranteed by Sunkist.*

Exchange Lemon Oil, U. S. P.— California Cold Pressed

Because of its clarity, uniformity and flavor intensity, it is the 10 to 1 choice over all other lemon oils sold in America. Never needs pre-testing when received in EXCHANGE-sealed containers. Guaranteed by Sunkist.*

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For true aromatic flavor, full color intensity and pure California flavor strength, EXCHANGE brand is the orange oil standard of the world. Guaranteed by Sunkist.*

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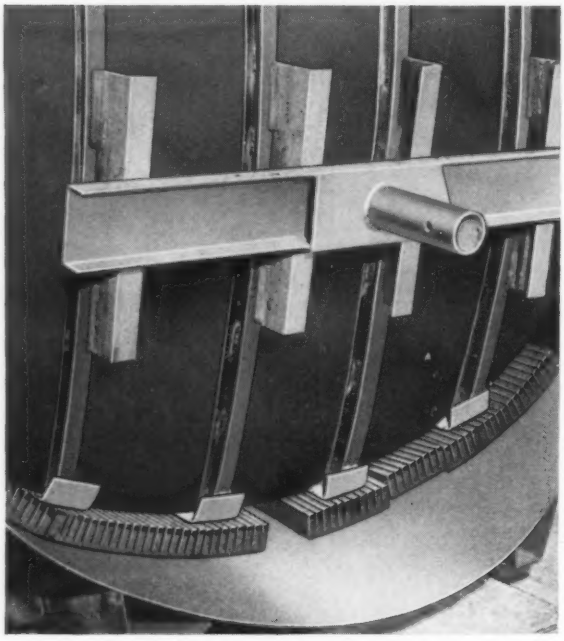


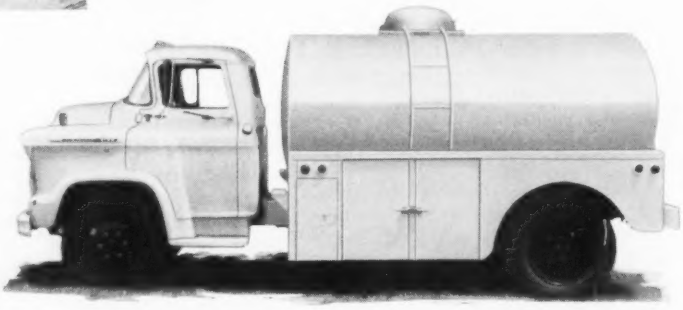
2" layer of Rubatex is applied between inner and outer shells of stainless steel milk tank. Rubatex is applied to inner shell with an adhesive between steel ring stiffeners used around inner tank. Thin layer of Rubatex also used over ring stiffeners—eliminating metal to metal contact. Outer shell is then wrapped around the Rubatex.

Rubatex answers need for careful temperature control in transporting milk as it has lowest heat conductivity (K Factor 0.21) of any known structural material and maintains its insulating efficiency indefinitely.

Rubatex's closed cellular structure also eliminates any possibility of bacterial growth between shells of tank—an important feature in handling liquid foods of any kind

Last—by no means least—Rubatex's light weight helps give Standard Steel Works one of the lightest farm pick-up tanks on road today—providing owner with an additional payload on his choice of truck.

In Standard Steel Works' own words: "After considerable investigation, we found Rubatex was the best low temperature insulation available anywhere."



Insulation efficiency, moisture and vermin proof qualities—plus extreme light weight—determined choice of Rubatex Insulation Hardboard as insulation for Standard Steel Works' 1700 gallon "Payloader" farm bulk pick-up tank.

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MEN & COMPANIES

Wesby R. Parker

Hit Song . . . Who's calling the tune for soft-drink marketeers nowadays?

"The consumer," declares Wesby R. Parker, new prexy of Dr. Pepper Co. "There's a noticeable change in marketing techniques. And its pivot is awareness that the consumer has a definite point of view—on package design, appearance, and size, as well as product quality."

At latest report, Dr. Pepper '58 sales were topping last year's by 12%.

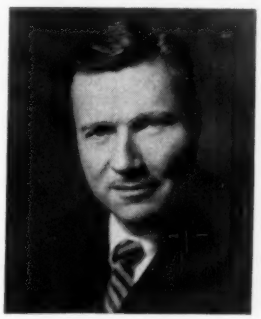
Now in his mid-fifties, described as having "an aggressive personality," Mr. Parker has been exec. v.-p. since July '58 and a director since Jan. '57.

Before joining Dr. Pepper, he served 10 yr. as a v.-p. of General Foods Corp.

Full Steam Ahead . . . Refined Syrups & Sugars, Inc., will launch a multimillion dollar expansion program. It has upped F. V. Smolderen, asst. to president and director of purchasing, to v.-p.

Mr. Smolderen, who purchases equipment, views company plans as an expression of confidence in the future of the food business.

"Such confidence comes," he comments, "in anticipating the needs of our industry, and acting to satisfy them through understanding and managing an *integrated* process—from raw materials procurement and production to marketing and distribution."



F. V. Smolderen

Richard S. Morse

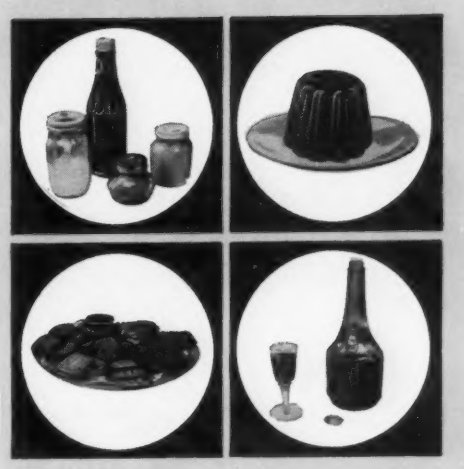
Research Pacesetter . . . New chairman of the Army scientific advisory panel is Richard S. Morse.

He is president of National Research Corp., Cambridge, Mass., which he organized in 1940. Firm's motto is "new enterprises through research."

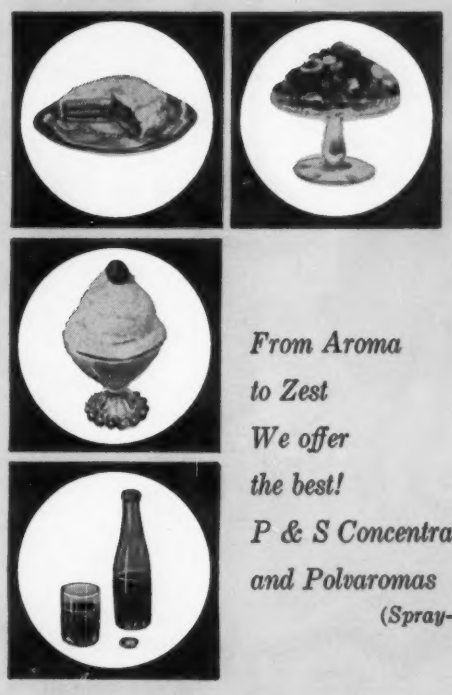
Food men will remember NRC's accomplishments in food dehydration (frozen citrus concentrate and soluble coffee).

Army Secretary Wilbur M. Brucker has stated that without the expert advice and counsel of the scientific advisory panel, the Army could not have written its truly magnificent record of progress in research and development activities.

Outgoing chairman is Dr. Frederick L. Hovde, president of Purdue U.



SAVOR *with* P&S FLAVOR!



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to Zest
We offer
the best!
P & S Concentrates
and Polvaromas
(Spray-dried)

See us at the I.F.T. Convention, Booths 44 & 45

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Offices: Chicago, Ill.; Los Angeles, Calif.; Toronto, Can.;
Plants: Teterboro & Guttenberg, N. J.; Culver City, Calif.; New York, N. Y.

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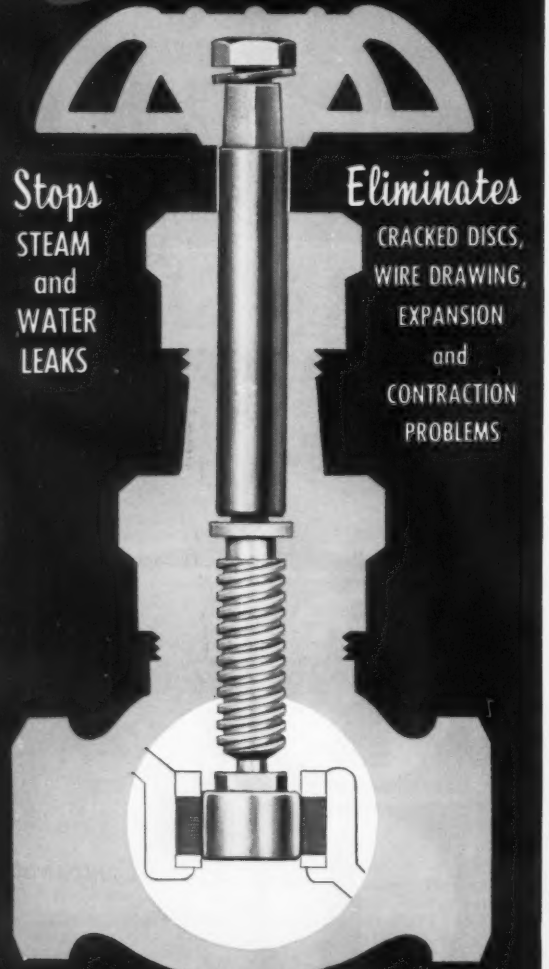
Dairymen!

Here is a Valve Designed Exclusively for YOU!

by Strahman



A resilient sealing ring and stainless steel piston replace the metal seat or disc found in the conventional valve, the cause of most valve troubles. The Strahman Valve seals itself as a cork seals a bottle. In throttling, the erosive action of the elements passing through the valve cannot have any effect on the sealing surfaces.

Strahman Steam and Water Valves are made of Bronze construction, with Stainless Steel Stem and Piston, assuring long life.

Write direct for complete catalogue

STRAHMAN VALVES, INC.,
16 HUDSON STREET, NEW YORK 13, U.S.A.

"Keep Up" . . . William J. Scarlett sees fast and fancy footwork demanded of suppliers to the food industry.

Now gen. mgr. of Lee Products Co., Inc., he predicts "a great deal of development and change in process methods, equipment, and procedures. Top equipment manufacturers *must* keep up with trends."

Formerly he was food industry mgr. of Brown Instruments Div. of Minneapolis Honeywell. He is a member of IFT.

William J. Scarlett

L. Vernon Drape

Bluer Skies Forecast . . . Higher quality standards for fishery products and bigger cooperative action in promoting fish and shellfish are targeted by L. Vernon Drape.

He has just been elected president of the National Fisheries Institute.

"We have seen some pretty dark days," he notes. "Admittedly we brought them on ourselves by not keeping our equipment modernized and not selling our products aggressively. But that time is rapidly ending."

He is head of Ell Vee Dee, Inc., Fall River and New Bedford, Mass. Even his hobbies are apropos—tropical fish and game fishing.

George P. Gardner, Jr., becomes board chairman of United Fruit Co.

Dr. William F. Geddes, chief of agricultural chemistry dept. at U. of Minnesota, is '58 winner of Nicholas Appert award. Presentation was made at the recent IFT meeting. Other '58 honors bestowed were: IFT's International Award to **Henri Cheftel,** of France; Institute of American Poultry Industries' Achievement Award to **Dr. Richard H. Forsythe,** director of Central Laboratories of Henningsen, Inc., Springfield, Mo.; and Babcock-Hart Award to **Dr. Bernard L. Oser,** president of Food & Drug Research Laboratories, Inc.

Charles G. Mortimer, head of General Foods Corp., will chairman food processing division of National Fund for Medical Education.

Dr. Virgil O. Wodicka is new director of the Army QMF&CI food division.

Fermenters for new MSG process. Early summer will see them on stream at **Merck & Co.'s** $4½ million Cherokee plant, Danville, Pa. Process is licensed from Kyowa Fermentation Industry Co., Ltd., of Japan.

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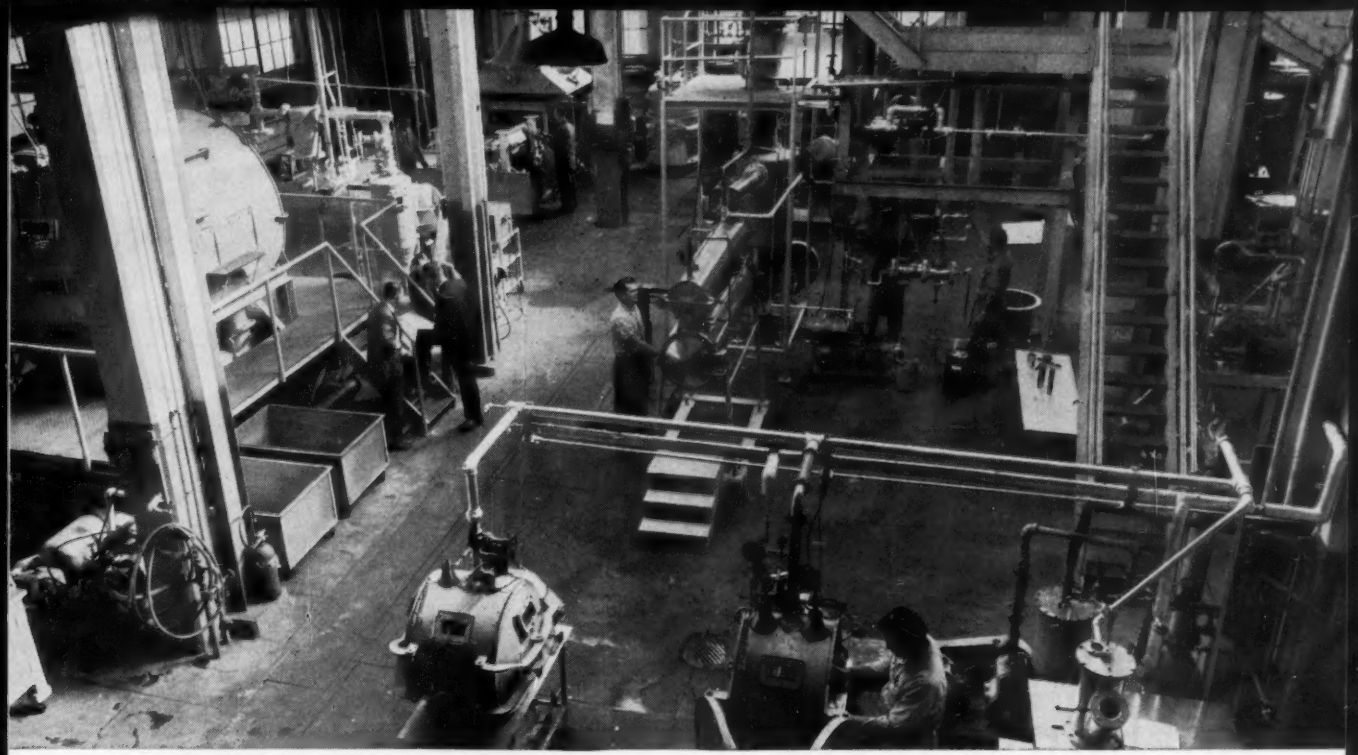
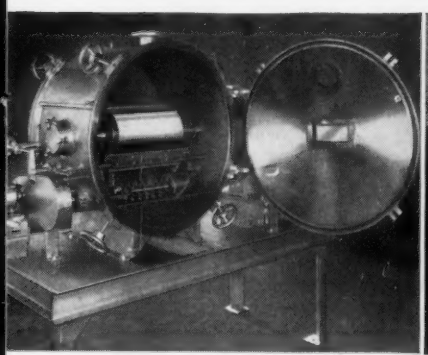


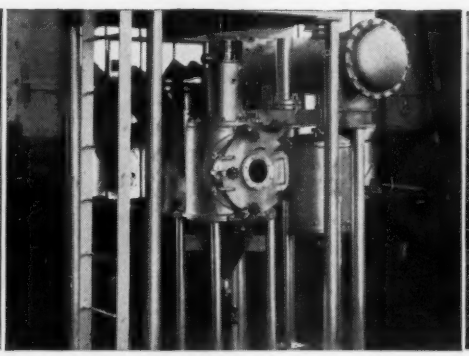
Start your pilot-plant projects in Buflovak's big processing lab

Whether you test a few beakers of precious material or run tank car quantities on a round the clock production scale, Buflovak's customer service laboratory is equipped for the job. An ultra-modern line of small scale and semi-plant size units makes this lab the outstanding center for investigating drying, evaporating, extraction, impregnation, crystallization and other related processes.

Constant research keeps Buflovak equipment—ranging from evaporators and dryers to kettles, autoclaves and flakers—the most advanced in the field, the most dependable in operation.

Top equipment and a distinguished engineering staff have solved over 7,000 processing problems. See how this know-how can work for you in your own product-process research. Write for Catalog 381. Additional details also available in the Chemical Engineering Catalog, pages 429 to 452.





Modernize your lab. Make your lab as up-to-date as Buflovak's research center. Choose from a complete line of dryers, evaporators and processing kettles designed for a small scale operation.

BLAW-KNOX

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Buflovak Equipment Division
1631 Fillmore Avenue, Buffalo 11, N.Y.

an economy decanter for liquid foods

by BROCKWAY

Why pay a premium for a decanter? Here is a graceful looking, *re-usable* quart decanter that costs no more than an ordinary quart container—even less in many cases.

It is ideal for all juices—tomato, orange, grape, apple, prune, pineapple, etc. . . . and of course vinegar or cider. Actually, it is perfect for anything that flows—liquid or semi-liquid.

Stippled shoulder area provides excellent hand grip when decanter is in use . . . also reduces visibility of any possible neck separation of product at the point of sale.

Your Brockway salesman will be pleased to provide samples and complete information on the Economy Decanter. Or, if you prefer, call or write direct to the Foods Division, Brockway Glass Company, Brockway, Pennsylvania.

SYMBOL OF QUALITY · GLASS CONTAINERS

BROCKWAY GLASS COMPANY, INC.

BROCKWAY, PENNSYLVANIA

Sales Offices in Principal Cities

Subsidiary: **Demuth Glass Works, Inc., Parkersburg, W. Va.** *Plants:* **Brockway, Pa. • Crenshaw, Pa. • Freehold, N.J. • Lapel, Ind. • Muskogee, Okla.**

Industry

Anheuser-Busch, Inc., reports total net sales of $52,249,366 for first quarter of '57, highest in its history.

DiCarlo Bakery, San Pedro, Calif., has been sold to Continental Baking Co., Rye, N. Y.

General Foods Corp. reports "biggest March quarter in the company's history," and says its capital spending rate for first 3 mos. of '58 has exceeded quota of the $30 million expected for the year. Capital outlays in '57 amounted to $25.5 million.

Heublein, Inc., has dedicated its $2.5 million plant in Menlo Park, Calif.

Nutrition Foundation has added 20 new grants-in-aid, amounting to $215,000, to $5 million already allocated in food research program. Selected as new trustees at its recent meeting are: Kenneth H. Redmond, president of United Fruit Co.; Dr. Conrad A. Elvehjem, president-elect of U. of Wisconsin; and Maurice Pate, exec. director of UNICEF.

Seabrook Farms will pack "Snow Crop" frozen peas at Lewiston, Ida., plant of Minute Maid Corp. this season.

Associated Industries

Continental Can Co. has retained Dr. Robert E. Wilson, retired chairman of Standard Oil Co. (Ind.) to make a study of Continental's research and development work.

Lily-Tulip stockholders have urged an increase in retirement benefits of the firm's key executives.

National Assn. of Food Chains has received an award for "outstanding achievement in public relations in the field of internal relations" from American Public Relations Assn. for its "Supermarket USA" exhibit at Zagreb, Yugoslavia, Grand Fair.

Deaths

Clive C. Day, 62, board chairman of Nestle Co., Inc.

Henry G. Duvernoy, 59, president of Duvernoy & Sons, Inc.

INTEGRITY COUNTS in PUMPS, Too

This DISTINGUISHED PUMP will win your RESPECT
TYPE OJ
AURORA® Horizontally Split Case, Double Suction, Single Stage Centrifugal Pump
For general water supply for municipalities, industries, office buildings, institutions—also—for handling liquids, chemical solutions, oils etc., in a wide variety of industries. Write for Bulletin 105-BM for further details.
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TAKAMINE ENZYMES
WORK FOR YOU ECONOMICALLY!

If your business is processing foods containing starches, proteins, pectins or glucose, chances are that you can produce a superior product more economically by using these specific TAKAMINE catalysts:

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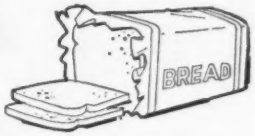
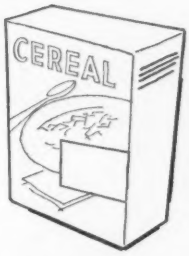


For the modification and hydrolysis of proteins in food and pharmaceutical manufacturing.

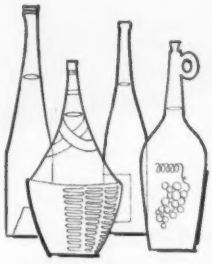
GLUCOSE-OXIDASE

Prevent browning due to glucose or oxygen or container corrosion, assuring longer shelf-life!

DIASTASES



For liquifaction and hydrolysis of starch to produce soluble dextrins and sugars, or to remove starch causing filtration problems.



PECTIC ENZYMES

For the hydrolysis of pectins in fruit and fruit juices to speed processing and to make fruit juices sparkling clear.

SODIUM ISOASCORBATE AND ISOASCORBIC ACID

are available in bulk or handy tablet form for protection of frozen fruits, vegetables, beer, carbonated beverages, meats and fish.

FOODS *Look* better . . . *Taste* better . . . *Sell* better with TAKAMINE products.

Write TAKAMINE Research Center for complete information on the use of enzymes in your particular operation:

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DIVISION OF MILES LABORATORIES, INC.
CLIFTON, NEW JERSEY

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REPUBLIC STAINLESS STEEL assures high degree of bacterial cleanability

NEW, STAINLESS STEEL SMOKE HOUSE at Crayton's Southern Sausage Company, Inc., Cleveland, Ohio, will pay for itself through savings in cleaning, maintenance, heating, and labor costs. Fabricated from Republic ENDURO Stainless Steel, Type 302—2B finish, it was designed and erected by the C. K. Shultz Company, Lima, Ohio.

STAINLESS STEEL SMOKE HOUSE HELPS LICK BACTERIAL INFESTATION PROBLEM. Meat packers, such as Crayton's Southern Sausage Company, Inc., have found in Republic ENDURO Stainless Steel the ideal material for use in processing stabilized, uniform, uncontaminated smoked meats.

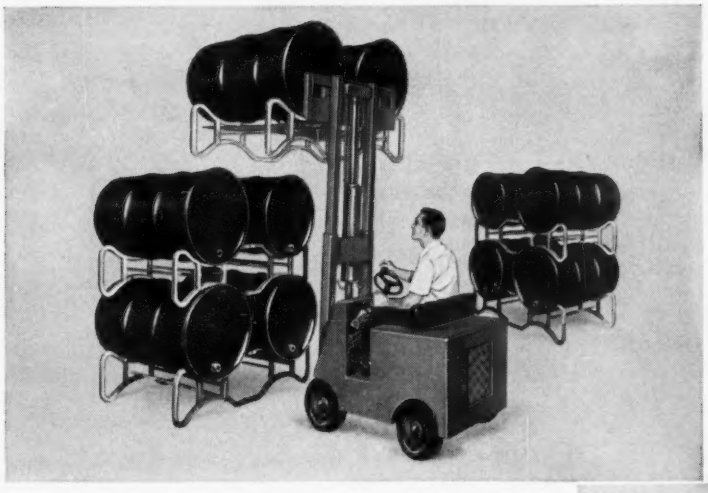
Why stainless steel? Because it offers a high degree of bacterial cleanability. In radioisotope tests, conducted at The University of Michigan on bacteria removal from worn or scratched surfaces, stainless steel proved to have the *highest cleanability,* over china, glass, and plastic. Also, worn stainless surfaces had the same *high cleanability* as new stainless surfaces. On unworn surfaces, stainless steel equaled china and glass, and was superior to plastic and aluminum.

Still another reason is the fact that stainless steel is noncontaminating. There is never any danger of metallic contamination. Stainless steel never adds unwanted flavor. Never takes anything away from the flavor you are striving to achieve.

Stainless steel in any food processing operation means less down time, less cleaning time, less maintenance, extended equipment life, lower costs.

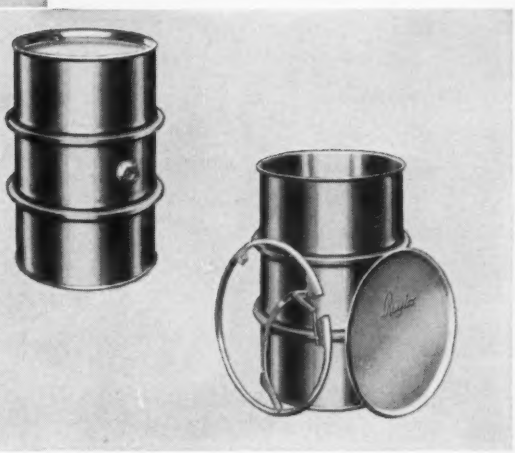
Safeguard the quality and purity of your products by using equipment fabricated from Republic ENDURO Stainless Steel. Your equipment-supplier has all the facts. Or send us the coupon for complete results of University of Michigan tests.

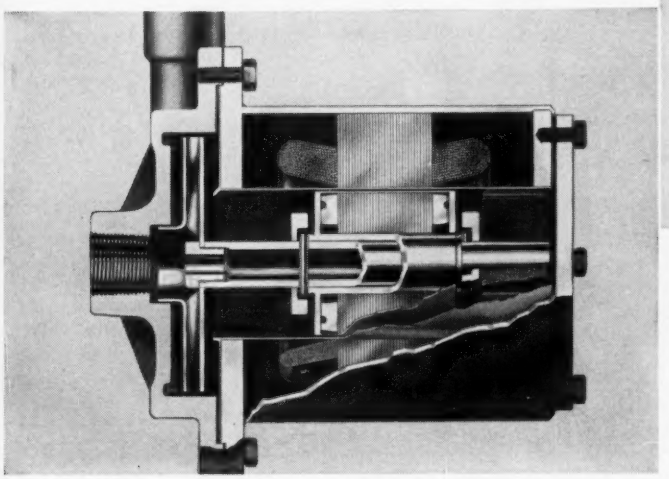
This example of the advantages of stainless steel is brought to you by Republic Steel in behalf of the stainless steel equipment manufacturers and the Republic Stainless Steel Distributors—your local steel service centers.



HERE'S ASSURANCE OF LOW-COST STACKING and handling of steel drums. It is Republic's new Portable Drum Rack. These steel cradles each support two loaded 55-gallon drums. Pairs of drums can be stacked to any practical height. More in-use drums can be accommodated in less space than ever before. Any standard fork-lift truck can pick up, move, and stack as many tiers of drums at one time as capacity permits. Shipped knocked down, with fasteners, for quick and easy assembly. Send coupon for complete details.

ASSURANCE OF MAXIMUM PROTECTION for your food products during storing or shipping is provided by Republic ENDURO Stainless Steel Drums and Barrels. They stubbornly resist corrosion. Never need painting. Withstand hard use and abuse. ENDURO Drums and Barrels are available in sizes up to 55-gallon. These are the ultimate in long-lasting, trouble-free, corrosion-resistant performance. Mail coupon for detailed literature.





TITANIUM ASSURES YEARS OF ADDED LIFE to processing equipment. Maximum corrosion-resistance plus an exceptionally high strength-to-weight ratio are major reasons for the use of Titanium in this seal-less, leak-proof, centrifugal pump made by Chempump Corporation, Philadelphia, Pennsylvania. Chempump's exclusive design makes it possible and *economical* to use Titanium for all wetted parts. Titanium is the ideal metal for processors using salt or brine. Titanium is impervious to the corrosive effect and pitting action of salt water and brine. Mail the coupon for more facts.

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Send more information on:
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PACKAGE SAVINGS FOR YOU

Fast to find hidden clues to savings in packaging . . . that's your G-Man*. Just call him to the scene; he'll pick up the trail from there. He comes up with refreshing new solutions to protection, packing, shipping problems . . .with corrugated boxes.

Whether you need regular containers in big volume or specially engineered packaging, call in this modern Sherlock now. He's keen-eyed, ready—and nearby.

**Your Gaylord Man – of course*

GAYLORD
CONTAINER CORPORATION

Gaylord Boxes

HEADQUARTERS, ST. LOUIS
PLANTS COAST TO COAST

DIVISION OF **Crown Zellerbach Corporation**

Are You Preparing *Now* For The Next Boom?

America's leading companies are not sitting on their hands waiting for the recession to end. They are planning ahead ***now*** for higher sales and near-capacity rates of operation.

These facts stand out clearly from the eleventh annual survey of Business' Plans for New Plants and Equipment just completed by the McGraw-Hill Department of Economics:

- **Manufacturing companies expect their sales to increase 20%, on the average, from 1958 to 1961.** Growth industries, such as chemicals and electrical machinery, expect gains of 25% to 34%.
- **If these sales gains are achieved, the average rate of operations in manufacturing will rise from 78% at the end of 1957 to almost 85% by 1961.** This is the point at which pressure on costs begins to mount, as less efficient facilities are pressed into service.
- **Industry is not waiting for this point to begin getting its plants and equipment in shape for the next boom.** Despite record expansion in the past several years, many manufacturing companies plan to add new capacity in each of the next four years. But, more important, they are going ahead with the vital job of modernization and cost-cutting.

In the years immediately ahead almost two-thirds of capital investment will go for modernization and replacement of present plants and equipment. In this way manufacturing companies can avoid the higher costs and the squeeze on profits that occur when producing facilities are not in shape to handle an increase in sales volume.

These are the plans, as reported to McGraw-Hill, of a wide sample of manufacturing companies—for the most part, large firms and leaders in their respective industries. Altogether, these firms account for almost 40% of all employment in manufacturing industries.

Now Is The Time

How do your plans measure up? Are you planning ahead now for a 20% sales increase in the next three years? Is your company planning to modernize its buildings and equipment more rapidly than at any time in the recent past? If not, here are some of the inducements

that McGraw-Hill editors report from their continuous checking on the state of business.

(1) **There are plenty of opportunities for increasing efficiency by the installation of new equipment and the improvement of layouts in plants, warehouses and offices.** Despite the installation of tremendous volumes of metalworking equipment in recent years, according to AMERICAN MACHINIST over half of the machine tools now in U. S. factories are over 10 years old. Replacement of worn-out and obsolete equipment will mean material savings in operating and maintenance costs.

(2) **Machinery, parts, materials and labor are much more readily available now than they are when the economy is running at full steam.** You can be more particular about quality and about specification to meet your own requirements.

(3) **With lower interest rates and less competition for loans, it is both easier and cheaper to borrow money to finance equipment and construction.** To wait for another boom is to run the risk of having to pay higher interest rates and look harder for money.

(4) **Although there is an adequate supply of most types of labor available now, the prospect is that the supply of factory labor over the years ahead will be tight.** In 1965, there will actually be fewer men and women between the ages of 25 and 44 than there are now. Good factory workers will be either hard to get, or wage rates will rise sharply or—more likely—both. The best answer is to anticipate the rise in labor costs by installing more efficient equipment to increase labor productivity.

(5) **Finally, the costs of investing in new buildings and improved equipment *now* are almost surely less than they will be later.**

These are some of the reasons why many leading firms find ***now*** the best time in years to start on a program of plant modernization. There are other good reasons in the many new products and processes coming from the boom in research and development. This year industry will spend over $8 billion on R & D—$1 billion more than in 1957. And a heavy share of the new product development will consist of better machines and processes to be made available during the next few years. Already the pace of technical advance is so rapid as to call for modernization of plants built only a few years ago.

Years of Opportunity

It has been said that the years between now and 1961 are the "middle years" between two booms. This does not mean a long period of recession, but a period of slower growth—a transition from the postwar boom based on deferred demand, to a new boom in the 1960s based on dynamic population growth and a revolution in technology.

If so, these are the years of opportunity for business—opportunity to prepare for the growth that lies ahead with the most efficient equipment, the most modern plant and the best production organization that can be devised. This is the way to fight higher costs and avert a resumption of inflation. This is also the way to ensure that your company will be ready for its new markets in the 1960s.

Are you planning ahead ***now*** to be among the leaders?

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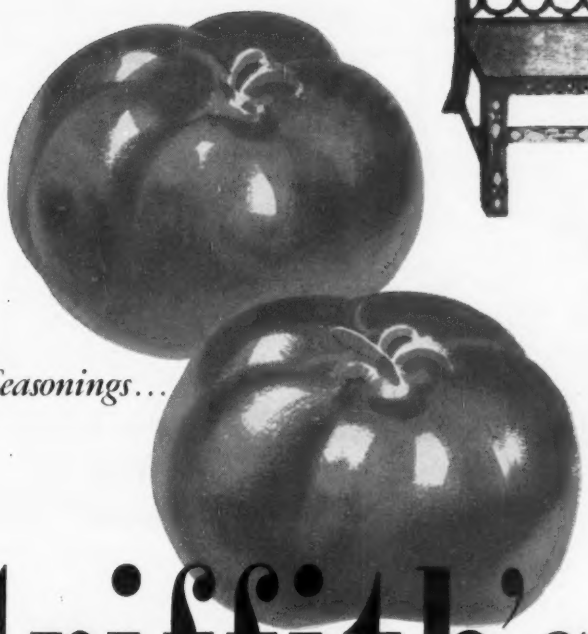
In Seasonings...



Griffith's solublized seasonings *with* Pepperoyal®

You'll detect an exceptional flavor quality in PEPPEROYAL. And find it duplicated, batch after batch. All of the pepper extractive is contained in the base material, without loss of essential flavor elements. The laboratory controls that insure PEPPEROYAL quality also assure the better taste of all Griffith soluble spices and seasonings. Use PEPPEROYAL in catsup, and all other food products for a distinctive flavor in '58.

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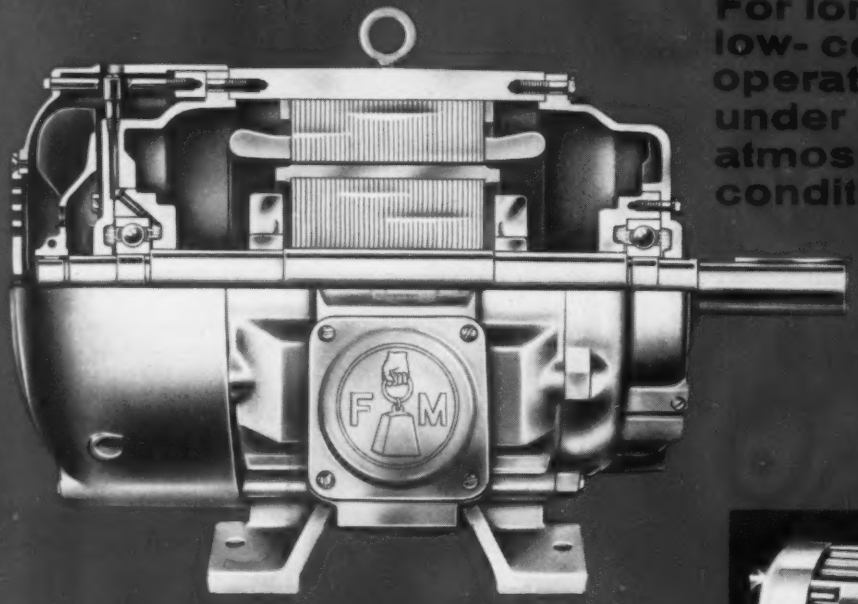

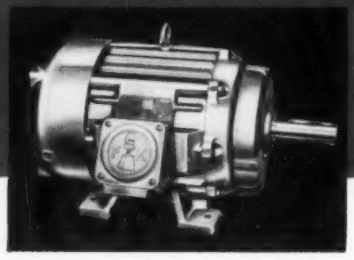

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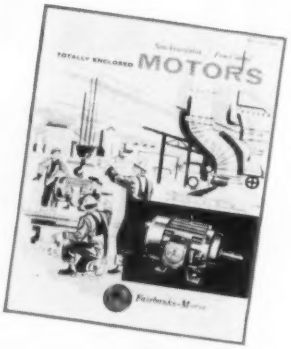
Fairbanks-Morse Totally-Enclosed Fan Cooled With Controlled-Stream Air Flow!

New Fairbanks-Morse design confines air stream to surface of motor—provides extremely efficient cooling, prevents dust and dirt accumulation. Combines advanced design innovations with long-proven F-M features.

See why these all-new F-M motors warrant your investigation *now* for severe service involving dirt, dust, metal turnings, or abrasive particles; corrosive vapors, steam, excessive moisture, etc.

Write today for new Bulletin 1205, giving complete information on new F-M Totally-Enclosed Fan-Cooled (Type KZC, in larger frames) and Non-Ventilated Motors (Type KZE, in smaller ratings). Fairbanks, Morse & Co., 600 So. Michigan Ave., Chicago 5, Ill.



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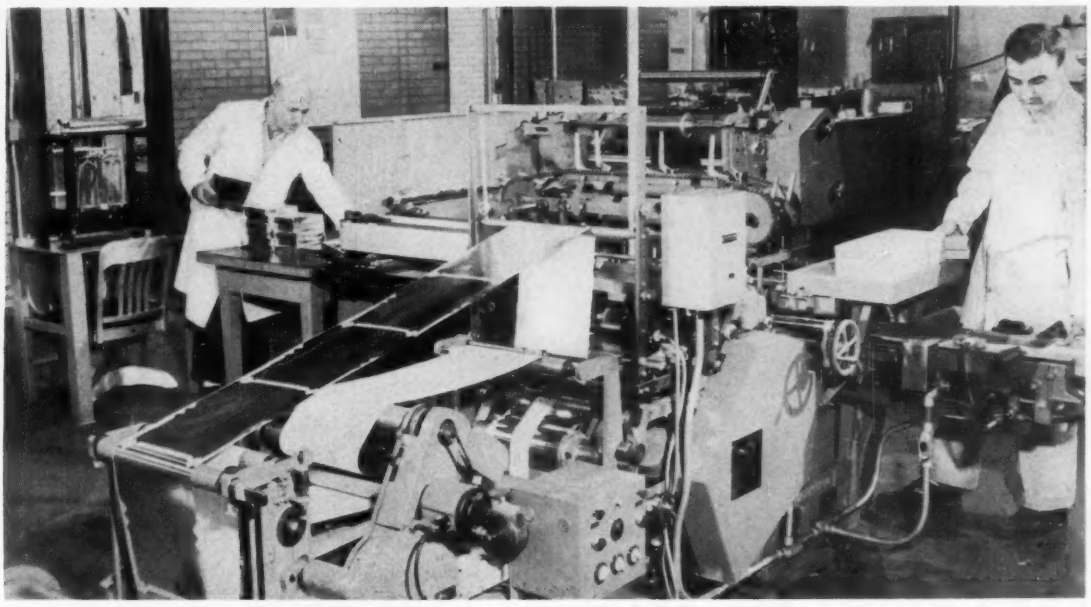


New Process Cuts Sealing Cost of Foil-Wrapped Packages

Foil-wrapped packages may now be hermetically sealed at lower cost by 'printing' an adhesive pattern on aluminum foil just prior to forming the overwrap.

Currently, most foil-package overwraps have a continuous layer of wax adhesive on inside of wrapper. When heat is applied, wax melts to make the seal. New method (Alcoa-Pacon) eliminates the need for all-over wax coating for most foil over-wrap applications, thus offers substantial savings. It should broaden foil uses where limitations on all-over coatings are restricting and expensive.

Basic tool of the process is a small printing machine (left foreground), which applies adhesive instead of ink and can easily be adapted to a packaging line. In operation, 'hot-melt' adhesive is applied in a single-impression printing operation, thus a package can be heat-sealed when wrapped. This method permits a wide range of adhesive thicknesses for effective sealing and barrier to gas and moisture.

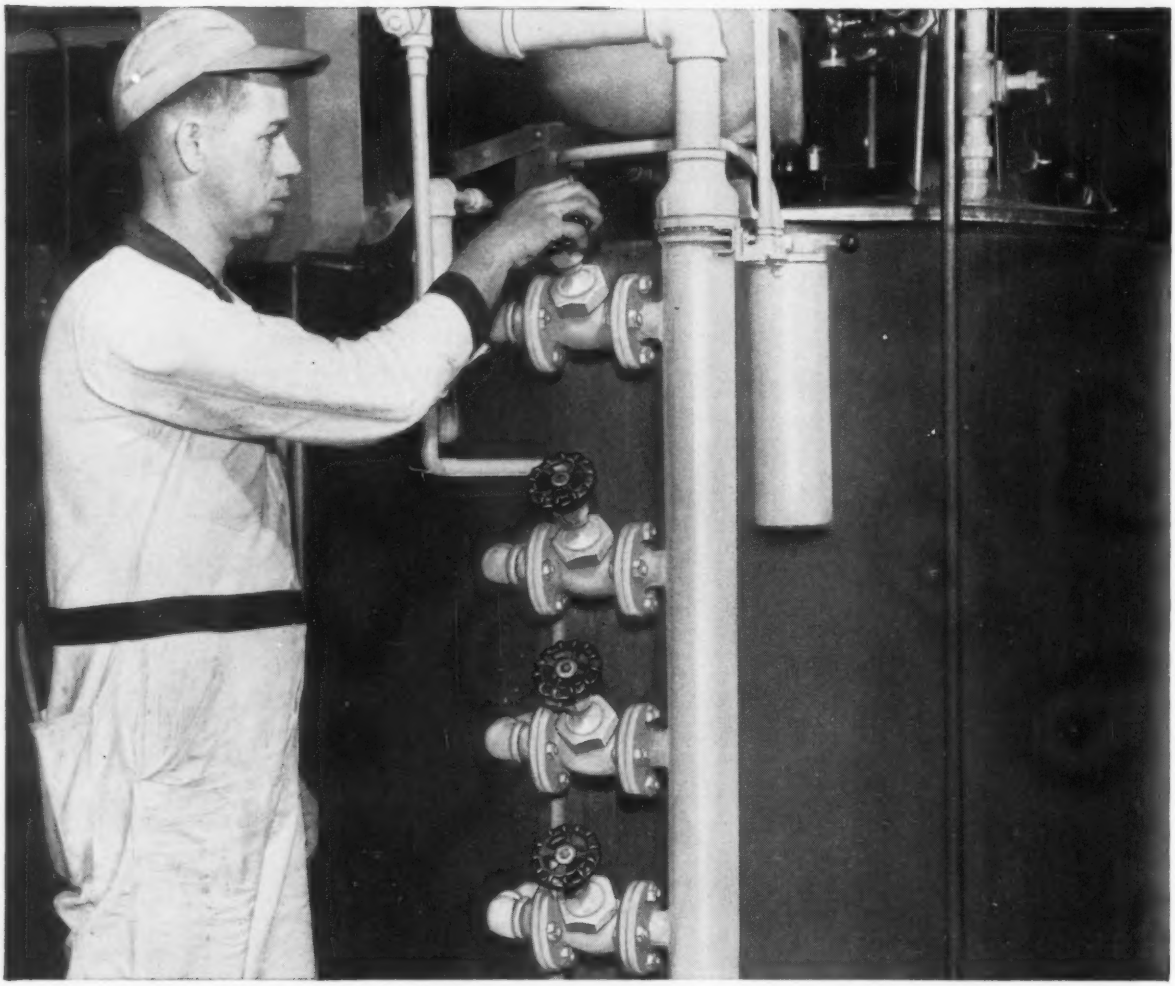
Since adhesive is applied only to the foil side, both metal-to-metal and necessary metal-to-paper areas can be sealed. When adhesive is on paper side of lamination, as in conventional sealing, only coating-to-coating and paper-to-foil seals can be made. In such cases there is considerable metal-to-metal area on side and end folds with no adhesive. Result is an insufficient barrier to moisture, gases, and infestation.

Another advantage of having adhesive on foil side is that it elimi-

Want More Information?

It's free—and easy to get. Simply note here the items on which you want more details, then circle each key number (there's one given at the bottom of each item) on the handy Reader Service Postcard—back of book. Then sign at the bottom and mail. For your convenience, too, these items are listed and keyed in the Reader Service Section.

How Cincinnati Dairy Stops Valve Maintenance Problem



CRANE Valves End Excessive Shutdowns for Repairs

About every four months maintenance men of Sealtest, Central Division, Cincinnati, Ohio, had to replace worn, leaky discs and thread-stripped stems of valves used on the dairy's pasteurizing tanks.

The high cost of down time, labor and parts was only a part of this maintenance problem. Each time the valves had to be repaired, the dairy suffered a drop in production and faced the possible loss of 600 gallons of milk.

Upon recommendation, Crane No. 9 bronze globe valves, with quick-change composition disc, were installed. Today—two and one-half years later—these Crane valves, opened and closed a dozen times a day, have not cost the dairy one cent for repairs, or any loss in production or milk.

Here again is proof that Crane valve economy is never measurable in terms of first cost. You get it in years of maintenance-free service.

That's why more prudent buyers specify Crane valves for every service.

LEARN WHY Crane bronze valves with composition discs are so economical for service on steam, hot or cold water, oil or gas. Write to address below for Circular AD-2222.

CRANE VALVES & FITTINGS

PIPE • PLUMBING • KITCHENS • HEATING • AIR CONDITIONING

Since 1855 — Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers Serving All Areas

nates sticking of overwrap to carton.

Technique was developed by Pacon Research & Development Corp., New York City. Alcoa Research Laboratories perfected the adhesives employed. Latter have a high-blocking temperature that permits efficient rewinding of foil.

Machine, which is being field-tested, will be introduced by Alcoa. —*Aluminum Company of America, 1501 Alcoa Bldg., Pittsburgh.*

Circle 16 on Reader Service Card

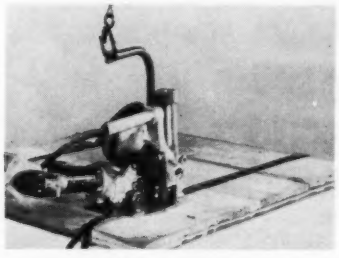
Unit Senses Liquid Level With Radioactive Source

Beta radiation employed in a new liquid-level control offers highly accurate gaging of both thin and viscous fluids.

Known as Betatrol, it consists of a small probe that houses a permanently sealed radiation source (28-yr. half-life) and detector tube. Unit has no moving parts, may be mounted in any position, and is connected to a remote amplifier. A relay actuates control devices.

Operation depends on the rising liquid absorbing radiation that normally passes freely from source to detector.—*Robertshaw-Fulton Controls Co., 401 N. Manchester, Anaheim, Calif.*

Circle 17 on Reader Service Card

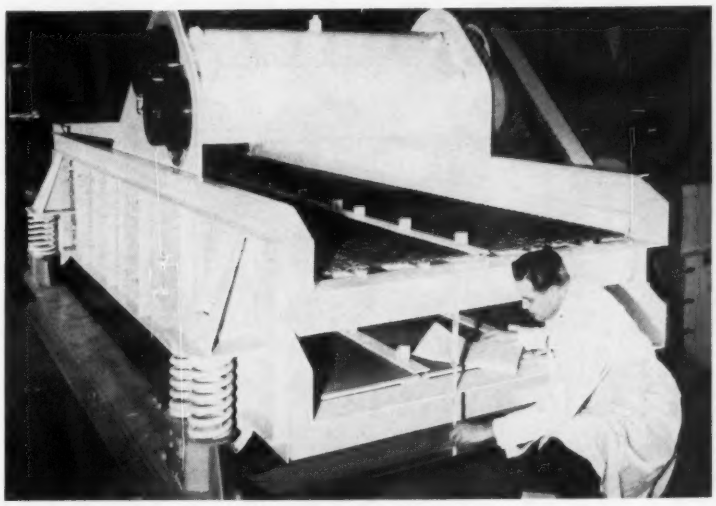


Powered Strapping Tool Offers Fingertip Control

This pneumatic steel-strapping tool provides power for every operation after strap is inserted—tensioning, sealing, and cutting.

Known as A4, it can be used in any position to apply either vertical or horizontal straps. Controls on handle predetermine the tension, regulate sealing, and cut strap flush with seal. Three models are available for ½-, ⅝-, and ¾-in. strapping, ranging 0.015-0.023 in. gage—*Acme Steel Co., 135th St. & Perry Ave., Chicago.*

Circle 18 on Reader Service Card



Versatile Screen Is Designed for Limited Headroom

Compact and efficient, this heavy-duty horizontal vibrating screen offers efficient dewatering, washing, and sizing of a wide variety of materials where headroom is limited. It can be cable-suspended or floor-mounted, and where conditions warrant, a combination of both mountings can be used.

Called CL-Model 58, it employs centrifugal-force, unbalanced shaft vibrators. Two eccentric shafts in the vibrator, which are supported by self-aligning bearings, are rotated by a helical-gear speed reducer. This provides the required straightline motion. For quick replacement of cartridge-mounted bearings, vibrator gears are mounted on tapered shafts. A positioning rod, provided with screen, supports the shaft during any bearing change and keeps it in a central position.

To further ease maintenance, screen decks are bolted to side plates. Thus, when a deck has to be replaced, it can be removed simply without taking out the entire screen frame.

Screens can be equipped with wash troughs, electrically heated decks, or bouncing-ball decks—singly or in combination. Screen decks may be fitted with wire cloth, perforated plates, or a wedge-wire type of screening.

Units are made with single or double decks in 15 sizes ranging 4x8 ft. to 6x16 ft. They have snubbing devices that limit motion during acceleration and deceleration, and automatically eliminate critical vibration in the resonance speed range.—*Link-Belt Co., Dept., PR, Prudential Plaza, Chicago.*

Circle 19 on Reader Service Card

Ceramic Exchanger Tubes Give Rapid Heat Transfer

Here's a new ceramic said to have excellent resistance to thermal shock, and three times the mechanical strength of ordinary glass. A thin-wall tube of this material can be heated to 1,300F., then plunged into ice water—with no adverse effects.

Called Pyroceram, its use as heat-exchanger tubing permits higher temperature differentials for faster heat transfer. Other applications include high-temperature bearings, piston heads, curtain walls, and blown or pressed ware.

Opaque product is made from glass by action of nucleating agents, which promote crystalline growth on subsequent heat-treatment. This produces a hard white finish. Currently, tubing is available in various diameters, and in lengths up to 10 ft.—*Corning Glass Works, Corning, N. Y.*

Circle 20 on Reader Service Card

Ingredients p. 144
Chemicals p. 144
Briefs p. 147

Stabilized with KELCOLOID®

after many months on the shelf, your product looks

For Kelcoloid solves instability of your emulsions, suspensions, syrups, sauces.

With Kelcoloid, you produce smoother tasting, stable and uniform products of superior flavor release and natural color.

EMULSIONS: Kelcoloid proves the positive way to solve instability of food emulsions. This easy-to-use hydrophilic emulsifying colloid improves consistency, gives smoother textured emulsions. Markedly increases shelf life.

SUSPENSIONS: With Kelcoloid you get maximum suspension of fruit pulp, both in concentrated and diluted juice. Kelcoloid improves uniformity of frozen concentrates and diluted juices.

SAUCES: Kelcoloid produces properly stabilized products with optimum body, clean full flavor, and long shelf life.

SYRUPS AND TOPPINGS: Kelcoloid gives syrups and toppings smoother taste, desired body, and superior flavor release.

If you make emulsions or suspensions, sauces or syrups, easy-to-use Kelcoloid is worth your immediate attention. And, if you have a product or processing problem, at your service are our highly qualified technicians, ready to give individual attention to your problems. Write or phone your nearest Kelco regional office today.

YOURS ON REQUEST: Free samples of Kelcoloid and Technical Bulletin describing properties and applications of this unique algin product.

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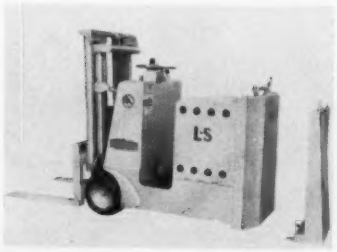
530 W. Sixth St., Los Angeles 14, Calif. • Cable Address: Kelcoalgin—New York

For more data, circle 303 on Reader Service Card



Removable Counterweight Doubles Truck Capacity

Standard capacity of this electric fork-lift truck (2,000 lb. at 48-in. load length) may be doubled simply by attaching a quickly removable counterweight.

A stand, included with unit (Model "E" Multi-Master) permits removing or replacing the counterweight in 2 min. by loosening two bolts. Operator backs truck against stand and loosens the bolts. Counterweight automatically drops into the stand and is held by a chain. Reversing the process replaces the counterweight. — *Lewis Shepard Products, Inc., Watertown, Mass.*

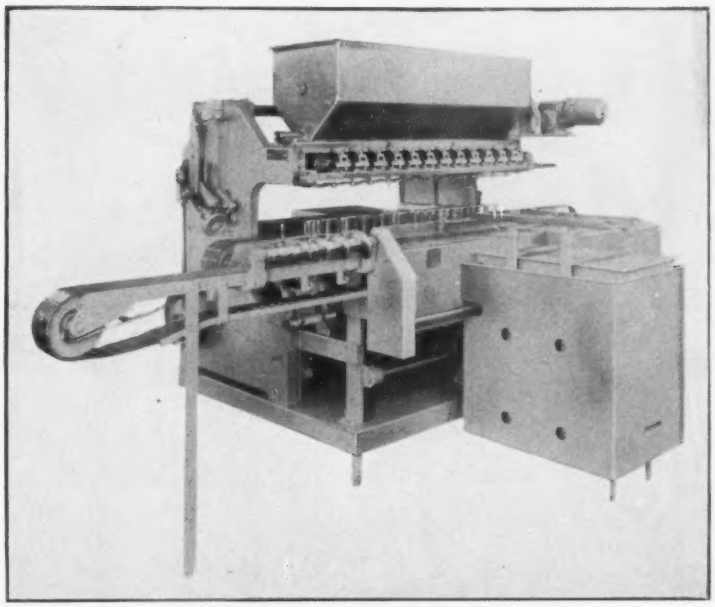
Circle 21 on Reader Service Card

Spray-On Coating Prevents Corrosion of Equipment

Easily applied, this low-cost liquid preservative can curb corrosion of tools, machine parts, and temporarily stored food equipment. Currently, it's being used to guard airplane assemblies in temporary outdoor storage.

Product (Sabrex) is sprayed on and dries in minutes. It can be quickly 'sprayed off' with an inexpensive solvent or by steam cleaning. Coating protects both ferrous and non-ferrous metals for 4-12 months. It is a non-oxidizing wax-type material that penetrates all parts of machined or fabricated metal surfaces. Should the self-sealing coating be ruptured, corrosion is localized to the immediate area.—*NaVan Products, Inc., Santa Monica, Calif.*

Circle 22 on Reader Service Card



15-Min. Changeover Cited for 250-Per-Min. Filler

Filling accuracy, 15-min. changeover to different size containers, and reduced waste through use of a simplified 'no jar—no fill' device are advantages cited for this new filler.

At up to 250 per min., unit (Model SL-58) fills semi-solids into any type of container up to and including 2 lb. and 1-qt. sizes. Its spring-lift rising table, set to correct height for various containers by a screw, requires no adjustment during changeover. Containers are smoothly indexed by a combination walking beam and pin-type push bars.

Unit is available in 4-, 6-, 8-, 10-, and 12-line models.—*Filler Machine Co., 10 Penn Ave., Rockledge, Philadelphia.*

Circle 23 on Reader Service Card

Short Tractor-Cab Design Offers Maximum Payload

Reportedly the shortest of its kind, this new tractor-cab arrangement measures only 89 in. from front of bumper to back of cab. Without exceeding overall length limits the tractor/semi-trailer combinations, it permits use of longer trailers with larger payload capacity. Overall length has been cut by moving cab forward, engine projecting

The finest general purpose temperature regulator in the industry. For the first time, you can get premium quality "extras" at no added cost. This new self-powered regulator is trouble-free, powerful and sensitive. Installation is easy and inexpensive. Large Sylphon® Bellows provides perfect stroke action for valves up to 4". Handles pressures up to 250 psi. Designed for extra-long life.

5 new extras at no extra cost:

1. New Teflon Chevron valve stem packing—no sticking, no leaking, no lubrication . . . ever!
2. New Monel Valve Stem—super-finished to prevent sticking!
3. New "Quick-Detach" stem fitting—valve removable without disturbing adjustments!
4. New Design incorporates "MA" valve—for "dead-end" service!
5. New overrun assembly—prevents regulator damage from overheating!

WRITE FOR BULLETIN D-LG

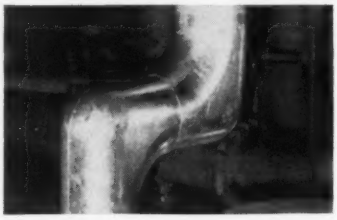
Mr. Controls

Robertshaw-Fulton CONTROLS COMPANY

FULTON SYLPHON DIVISION • Knoxville 1, Tenn.

Equipment & Supplies

slightly into cab. Unit is available in two models (B-66 and B-67), powered by maker's gasoline and diesel engines respectively.—*Mack Trucks, Inc., 1355 W. Front St., Plainfield, N. J.* Circle 24 on Reader Service Card

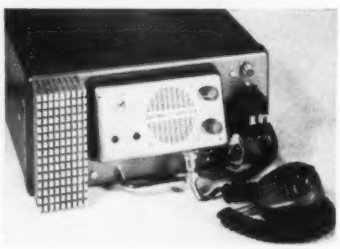


Special Elbow Jacket Covers Many Fittings

The oversize radius of this aluminum jacketing elbow enables covering long- and short-radius 'ells'.

Twelve interchangeable sizes of 'humped' ells (Gasco) fit over 107 combinations of varying pipe sizes and insulation thicknesses. Such versatility minimizes inventory requirements. Units are made of heavy-gage aluminum without metal folds, which eliminates the 'stovepipe' appearance. Supplied in two halves that nest to minimize storage space, they are installed with sheet metal screws and may be easily removed for inspection or salvage.—*Pittsburgh Corning Corp., 1 Gateway Center, Pittsburgh.*

Circle 25 on Reader Service Card



Transistors Up Efficiency Of Mobile Radio Unit

Transistor-powered for reliable communication, this 60w. mobile radio may be used with either positive- or negative-ground 12v. d.c. systems, important for truck fleets.

Transistors, employed in both transmitter and receiver, are protected by a heat-dissipating 'sink' mounted externally in front of unit. Receiver performance is improved by reduction of electrical noise, which also extends communication range.

For more data, circle 304 on Reader Service Card

NEW *Electroglide** DOOR

automatic power operation speeds high volume trucking

A COMPLETELY NEW design for a power-operated door. Electroglide delivers famous Jamison Cold Storage Door performance plus fast, automatic opening and closing. Available as both bi-parting and single leaf.

smooth, spring cushioned no shock operation

- Exclusive cam lock compression seal with "down" and "in" action assures positive gasket contact.
- Exclusive shock absorbing chain link absorbs shock of start and stop—minimizes power requirement.
- Exclusive calibrated balancing spring gives cushioned no shock closure and counterbalances weight of door for easy opening.
- Exclusive full height safety edge is sensitive full travel of door.
- Exclusive enclosed reduction gear sealed in oil.
- Emergency controls; padlocking provision; rear emergency release.
- Tough, durable gaskets. All gasket contacts visible.
- Doors are factory assembled and given operating tests before they are shipped in easily erected units.

For descriptive bulletin write today to Jamison Cold Storage Door Co., Hagerstown, Md.

*JAMISON TRADEMARK

JAMISON
COLD STORAGE DOORS

For more data, circle 305 on Reader Service Card

Aluminum Foil Packaging–Flavor Retention

Report No. 15 of a Series by Reynolds Metals Company

FLAVOR is the main quality or characteristic upon which repeat sales of packaged foods or food products depend. A package can look good and provide a maximum of convenience...but it will not be purchased a second time if it did not adequately preserve the flavor of its contents the first time.

A food processor may use the finest ingredients prepared with the most modern equipment under the supervision of the best chefs...but the fine flavor, which is at its peak immediately after preparation, can be lost within a few hours if it is not protected by the proper packaging materials.

Causes of Flavor Loss

Several of the more important causes of flavor loss are:

1. Chemical changes in the food such as oxidation or hydrolysis (both greatly accelerated by light, moisture and air).
2. Absorption of foreign flavors from the packaging material or through it.
3. Direct loss of volatile flavorings through the packaging material.
4. Bacteria and mold.

Aluminum foil provides a powerful means of combating flavor deterioration from such causes. It is opaque, preventing harmful light from catalyzing oxidation or other chemical reactions. It protects against flavor-destroying oxygen and moisture. Aluminum itself is odorless, tasteless and non-toxic. Its low moisture and gas permeability minimize the entry of foreign odors and the escape of volatile flavors. And, in addition, aluminum foil is an effective component for vacuum and gas packaging, both of which retard bacterial changes.

The accompanying three graphs show how aluminum foil helps retain the original flavor of packaged food products subjected to different forms of flavor loss.

Fig. I illustrates the lowering of butter quality due to outside flavor contamination. Grade A butter wrapped in aluminum foil and in parchment was stored at 40°F in a refrigerator with onions, cabbage and garlic. In three days, the parchment-wrapped butter had dropped to a score of 88—cooking grade—while the aluminum-wrapped butter maintained its original 92 score.

Protects Against Rancidity

Fig. II indicates how quickly flavor can be lost through chemical change. Potato chips in aluminum foil bags, wax-glassine bags, double cellophane bags and polyethylene bags were exposed to an RS 275 watt sunlamp four feet away. In less than three days, the potato chips in translucent and transparent packaging had developed a pronounced rancidity whereas the aluminum-packaged potato chips maintained good flavor after thirteen days. These losses were attributed to oxidation, a cause of even more rapid deterioration of certain other foods when they are not protected against light or air.

Loss of a volatile flavor ingredient is shown in Fig. III. Puffed mint candy was stored at 100°F. Candy wrapped in heat-sealed aluminum foil retained "very good" mint flavor after six weeks, while the candy in heat-sealed cellophane had lost nearly all its mint flavor in that time.

Aluminum foil packaging thus assures a maximum of repeat sales by protecting flavor more efficiently than any other flexible packaging material. For further information on this and other phases of aluminum packaging protection, call the nearest Reynolds sales office. Or write to **Reynolds Metals Company,** Richmond 18, Virginia.

Watch Reynolds All-Family Television Program "DISNEYLAND", ABC-TV.

©1958 by Reynolds Metals Company

FIG. I

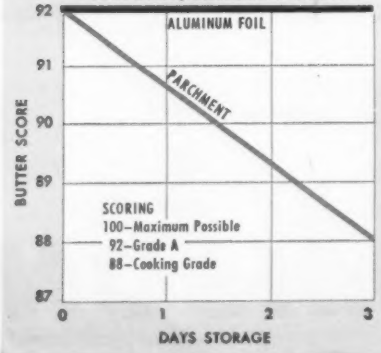


FIG. II

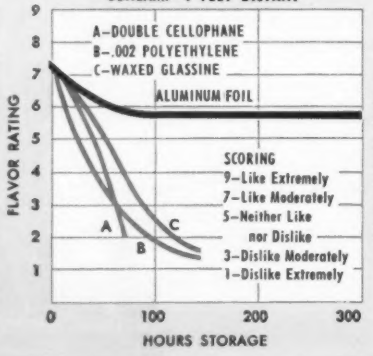
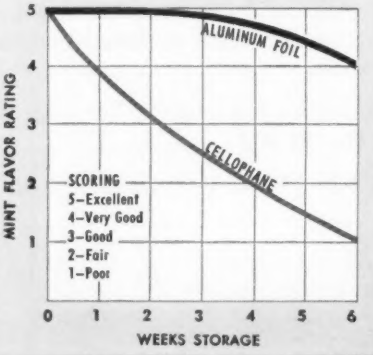


FIG. III



For more data, circle 306 on Reader Service Card

Battery-voltage variation, from + 20% to − 50%, will not damage the power supply.—*General Electric Co., Communication Products Dept., Syracuse, N. Y.*

Circle 26 on Reader Service Card

New Dry Bearings Offer High Wear Resistance

Many advantages are cited for a new plastic-metal dry bearing material.

Called D-U, it offers: Very low friction, greatly improved wear resistance, high thermal conductivity and low thermal expansion; compressive strength of 23 tons per sq. in. and an operating range of −392F. to 536F.

Product consists of a steel backing with a thin sintered lining of spherical bronze. Latter is impregnated with a mixture of Teflon and lead, a thin layer of which also covers the bearing surface. Result is two completely interlocked sponge-like networks. Bearing material is available in strip form in a range of thicknesses, from which bushings can be wrapped, thrust washers cut, or hemispherical bearings pressed. — *U. S. Gasket Co., Camden, N. J.*

Circle 27 on Reader Service Card

Loading, Delivery Sped By New Truck Racks

Overall loading and delivery time of food-service trucks may be cut by these new steel racks.

Units are specially designed to prevent damage to foods in transit. They come in sizes adaptable to most light delivery trucks, also are customized for special requirements. Loading, handling, and delivery are quick and easy.

A front-locking hinge prevents items from being spilled forward when truck makes quick stops. Racks have roof angles and accessory hard-

THE PENNSYLVANIA PLAN:

100% financing for your new plant

Complete financing for Lease-Purchase of a new plant is available in labor-surplus areas of Pennsylvania through combined efforts of lending institutions, non-profit community organizations and the Pennsylvania Industrial Development Authority. Interest as low as 2%, with deferred amortization, can be applied on up to one-half of total plant cost.

100% financing is also available in other areas of the State, provided by community organizations, banks, insurance companies and other sources. You select the community you want. You specify plant construction details or choose one of several plant "shells" now being readied for completion.

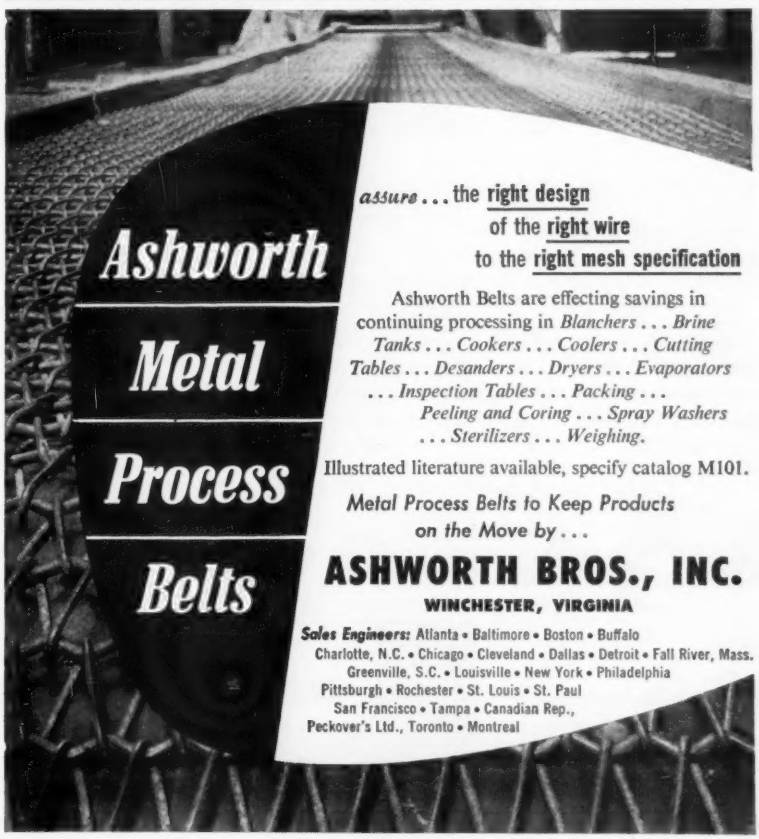
100% Financing at a glance... Industrial Plant Construction Costs—

Subscribed by local non-profit community sponsored builder-owner corporations.	*20%*
2nd Mortgage Loan, Pennsylvania Industrial Development Authority.	*30%*
1st Mortgage Loan obtained from banks, insurance companies and similar lending institutions.	*50%*
Total financing, secured through local subscriptions and mortgage loans, without cash investment by the manufacturer.	*100%*

For free copy of "Plant Location Services" pamphlet, or for details on 100% financing, write or call:

Pennsylvania Department of Commerce
Main Capitol Building
1167 State Street, Harrisburg, Pa.
Phone: CEdar 4-2912

For more data, circle 307 on Reader Service Card


Ashworth
Metal
Process
Belts
assure... the right design
of the right wire
to the right mesh specification
Ashworth Belts are effecting savings in continuing processing in Blanchers... Brine Tanks... Cookers... Coolers... Cutting Tables... Desanders... Dryers... Evaporators... Inspection Tables... Packing... Peeling and Coring... Spray Washers... Sterilizers... Weighing.
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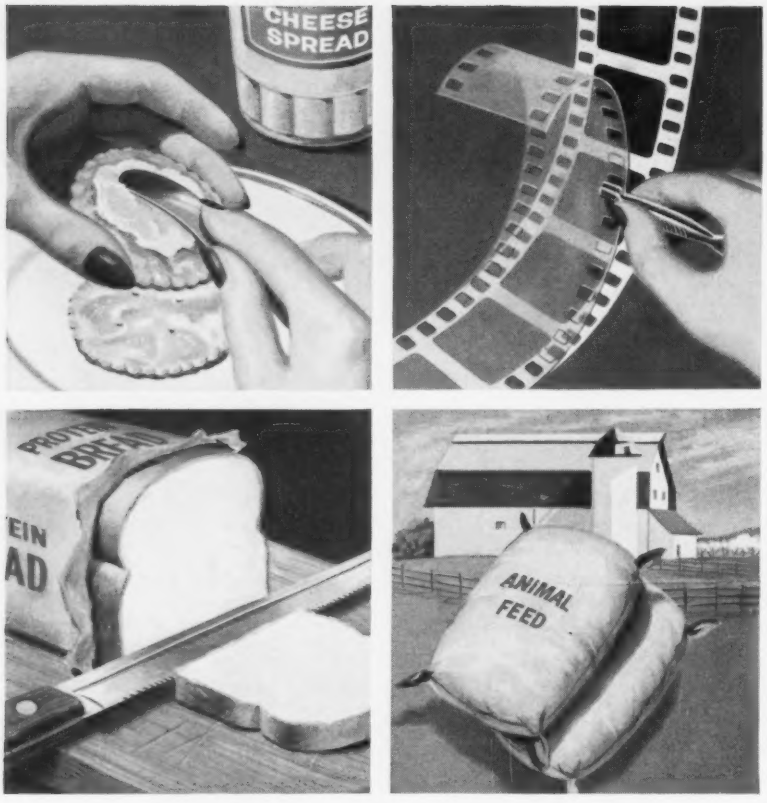

RHOZYME

Proteolytic Enzymes... useful for processing proteins

RHOZYME natural enzymes are valuable, effective low-cost aids for removing protein or for solubilizing protein and converting it into amino acids of high nutritional value.

Carefully standardized to provide uniform, reliable performance, RHOZYME purified food-grade enzymes make meats tender, not mushy . . . modify whey protein for cheese spreads . . . strip gelatin emulsions from motion picture negatives for recovery of silver and reprocessing of the film base . . . improve the machinability of bread dough and give better grain and texture in the final loaf . . . permit easy processing of fish solubles for supplements in animal feeds.

Supplied as dry powders, RHOZYME enzymes have excellent storage stability.

Rohm & Haas will be pleased to show you how the *specific*, *controlled* action of RHOZYME proteolytic enzymes can help you improve your protein processing. For full information write Dept. SP.

RHOZYME is a trade-mark, Reg. U.S. Pat. Off. and in principal foreign countries.

Chemicals for Industry

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WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Representatives in principal foreign countries

Equipment & Supplies

ware for bolting to floor and roof.—*Lockhard Mfg. Co., 6350 E. Davison Ave., Detroit.*

Circle 28 on Reader Service Card

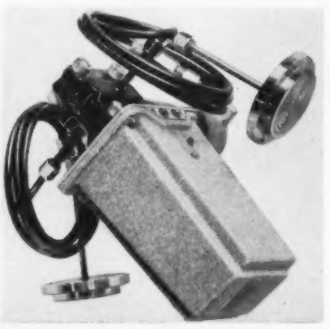
Carrier Unloading Sped By Telescoping Unit

Pushbutton-controlled, this 17-ft. telescoping conveyor extends to 51 ft. to unload carriers and deliver bags or cartons right to stacking points.

Unit is mounted on swivel casters for easy portability. Its head stand has a scissors jack affording 14-in. height adjustment. Discharge plate is also adjustable.

Conveyor consists of spring belts and grooved rollers. Overall height required for each deck is 10 in., and each level is individually powered.—*Power-Curve Conveyor Co., 2185 S. Jason St., Denver.*

Circle 29 on Reader Service Card



Simplified Flow/Level Meter Gages 'Difficult' Liquids

Complex flow and liquid-level measurements may be simplified by this compact volumetric differential-pressure transmitter. Its pneumatic

For more data, circle 309 on Reader Service Card

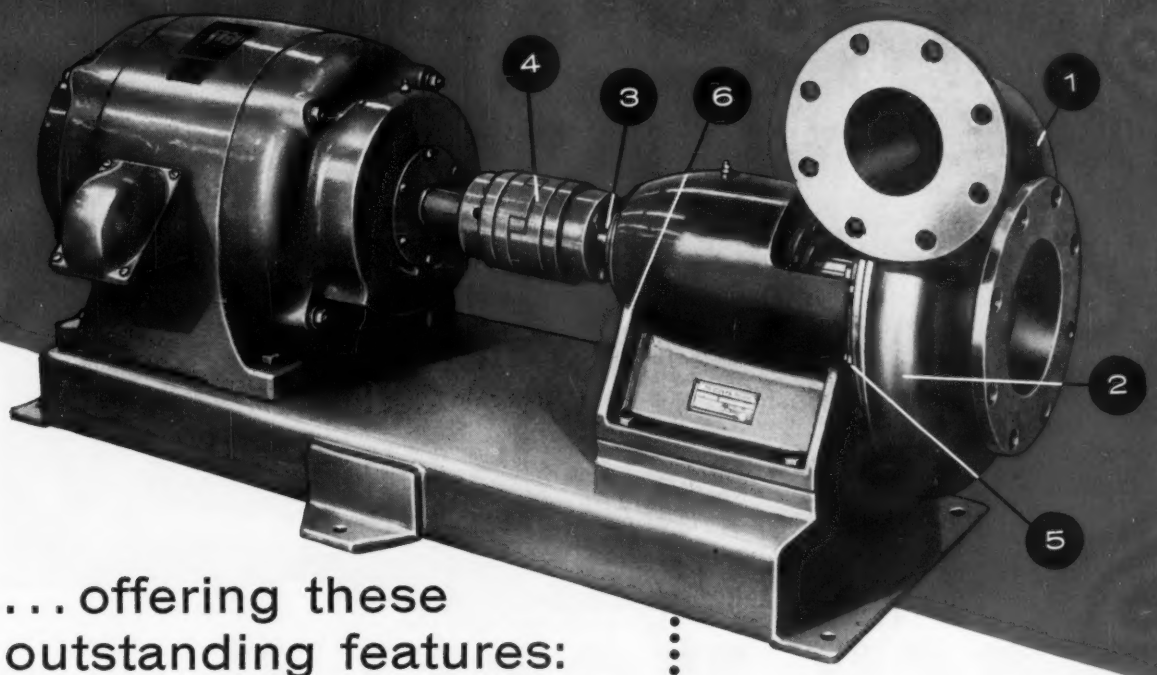
For more data, circle 310 on Reader Service Card

TRI-CLOVER

presents an *ALL-NEW* series of

INDUSTRIAL *Centrifugal* PUMPS

for dependable corrosion-resistant service



. . . offering these outstanding features:

1. *Volute type case* . . . specially designed heavy duty pump head gives maximum conversion of velocity to pressure energy, with high efficiency. Pump head swings 360 degrees.
2. *"Francis" type impeller* . . . produces lower pressure at shaft sealing surface—minimizes danger of impeller clogging.
3. *Precision-machined shafts* . . . minimize possibility of deflection or vibration. Over-sized ball bearings insure long, trouble-free operation.
4. *Spacer type coupling* . . . allows removal of complete pump rotary assembly, including impeller and frame, without removal of base or disturbing piping or electrical connections.
5. *Exclusive backplate design* . . . accommodates either packing gland or mechanical seal stuffing boxes, which can be easily interchanged in the field.
6. *Rigid one-piece frame* . . . of cast iron, has oversized pocket for collecting any leakage from stuffing box, and can be piped to drain away from pump.

For over 35 years, Tri-Clover Division has specialized in the development and manufacture of high quality corrosion-resistant centrifugal pumps. Now, to further extend this pump line, and to meet more highly specialized pumping requirements, Tri-Clover presents an entirely new series of high efficiency centrifugal pumps.

This new series of Industrial Stainless Steel Pumps is offered in a full range of sizes and seal styles, including models to operate at temperatures of minus 80° F to plus 400° F.

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For the full story on these new pumps, write for a copy of the new Pump Bulletin 258-I.

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Tri-Clover Division

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MACK MODEL N's
really move the goods!

Granted—the Mack Model N is a sweet looking job, a real prestige-booster for any outfit. But, like its famous conventional B Model brothers—the Mack Model N is the most rugged, reliable, economical performer in its field . . . a Mack from the word "Go!" Sure . . . Mack Model N's have—

the power to move more goods. Mack Model N's offer a spread of gasoline or Diesel powerplants up to 205 h.p.—more than enough to meet your every need for power and performance.

the stamina to move more goods. Macks are built to standards no other maker reaches. These husky haulers are famous for the greatest freedom from road stoppages and down time of any truck—anywhere.

the handling characteristics to move more goods. Model N's shorter length, air shift, air boosted hydraulic clutches, air brakes and option of power steering mean fatigue-free drivers who stay alert and efficient all day long.

If you're plagued by the three C's—costs, congestion and competition—then call your Mack branch or distributor and take a long look at powerful, dependable Mack Model N trucks and tractors. And include your best driver and ace mechanic, too! Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

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output goes to a recorder and/or controller.

Typical applications include gaging of slurries, corrosive fluids, colloidal suspensions, and liquids that 'jell' when not in motion.

Unit (205T) consists of two sensing elements and capillaries connected to a differential-pressure diaphragm. Two types of assemblies are available: For flush mounting in a pipe tee, or on a standard 3-in. flange. Temperature limit is 300F.; pressure limit, 1,500 psi.—*Taylor Instrument Cos., 95 Ames St., Rochester, N. Y.*

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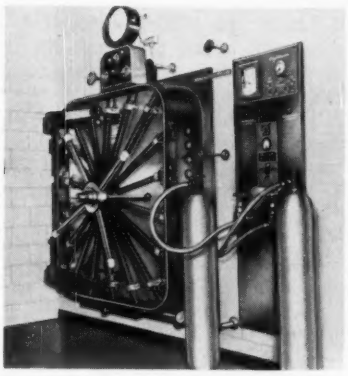


Permits Food Sterilization By 250F. Steam or Gas

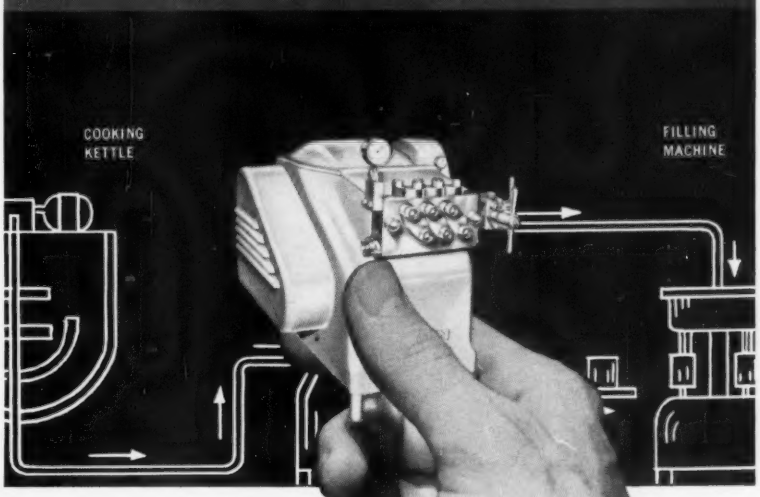
A dual-purpose unit, this vacuum-pressure chamber enables conventional sterilization with steam at 250F. and 'cold' sterilization of heat- and moisture-sensitive materials or packaged supplies.

Known as Cry-O-Therm, its dual controls for steam or ethylene oxide make both processes fully automatic throughout the respective cycles. Sterilizing gas may be any of the readily available ethylene oxide-carbon dioxide mixtures or maker's new low-pressure gas (Cry-Oxide), an 11% ethylene oxide mixture inerted with an aerosol-type propellent. Current interest in ethylene oxide results from its extreme diffusibility, which permits items to be packaged in paper, carboard, or Pliofilm prior to sterilization.

Standard chamber capacities range 16x16x30 in. to 60x66x120 in. Units are available in conventional single-door models or with double interlocking doors. Latter permit supplies to be loaded from an unsterile area and delivered into a sterile one.—*American Sterilizer Co., Erie, Pa.*

Circle 31 on Reader Service Card

HOMOGENIZING



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automatic wrapping machine

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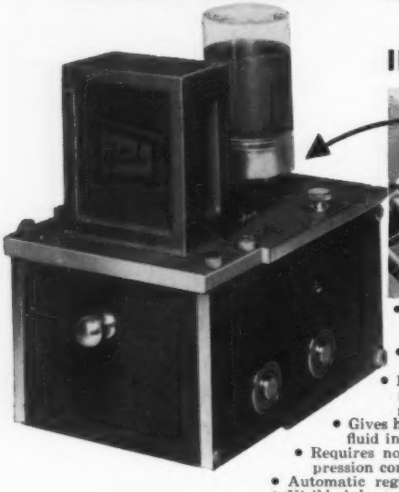

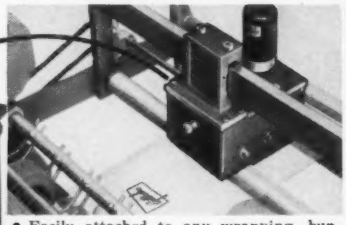

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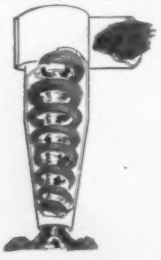

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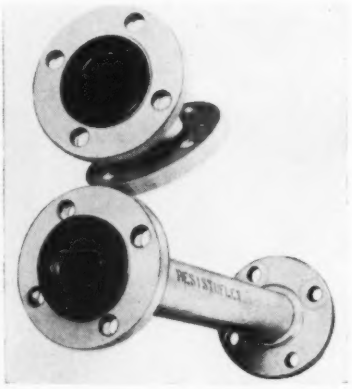

Pipeline Corrosion Curbed With Plastic-Lined Units

Lined with a high-density Teflon compound, these pipes and fittings resist corrosion at temperatures to 500F.

Designated Fluoroflex-T-S, pipe liners are jacketed with schedule 40 seamless steel pipe. They have 150-lb, ASA flanges threaded and welded at each end to form an integral unit. Pipe assemblies and similarly-lined elbows (45 and 90 deg., 125-lb. ASA cast iron and 150-lb. ASA cast steel, respectively) are available in 1-4 in. sizes.

These units will soon be complemented by matching fittings (tees, crosses, reducers, and a line of 6-in. pipes and elbows) to provide a complete corrosion-proof system.—*Resistoflex Corp., Roseland, N. J.*

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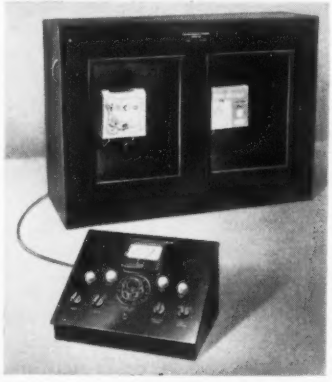

Package-Legend Legibility Gaged by Unique Unit

Here is a new tool for checking effectiveness of your package as a "silent salesman" in supermarket merchandising.

Known as "Videometric Comparator," it compares legibility of various packages by showing the rela-

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Safeguard Food against Mold and Yeast Spoilage with SORBISTAT®

Here's a promise of new protection for a wide variety of food products. Extensive tests have proved that Pfizer SORBISTAT (sorbic acid) selectively inhibits the growth of many molds, yeasts and certain bacteria which cause spoilage.

Cheese and cheese products, prepared gelatin, fruit, vegetable, and other salads, and fruit cake are some of the foods for which sorbic acid protection has been evaluated and found effective. The protective value of sorbic acid in pickles, soft drinks, pie fillings, and chocolate syrup is now being carefully analyzed. Reports indicate that in certain cases, sorbic acid is several times as effective as other antimycotic agents now in use.

Most important, since SORBISTAT is a selective growth inhibitor of yeasts and molds, it does not interfere with the normal microbiological curing of cheeses. At normally effective use levels SORBISTAT does not affect the appearance, taste or odor of any food product. It is a stable, easily stored, white crystalline powder that's added to foods as a powder or as an easily prepared solution.

Discover for yourself how SORBISTAT can keep your foods in better condition... and your customers better satisfied! Write for technical literature and sample today.

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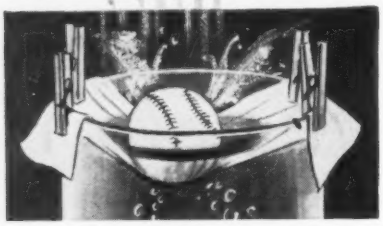

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tive ease of recognizing and reading lines on a carton. Moreover, it gives an exact legibility differential on a numerical scale.

In operation, one or two test packages are placed behind a screen of specially treated material whose opacity is electronically controlled. As screen gradually becomes transparent, the most prominent line is read first, then other features in order of their legibility.—*R. E. Van Rosen Corp., 18 W. 56th St., New York City.* Circle 33 on Reader Service Card

INGREDIENTS

New Meat Cures Curb Loss Of Nitrite, Ascorbate

Greater stability is reported for two patented meat-curing formulations.

First is a dry curing salt containing nitrite, nitrate, salt, and an alkali. Latter enables incorporation of sodium ascorbate or sodium isoascorbate with no breakdown in nitrite or ascorbate values.

Second composition is a meat-curing liquor containing ascorbate, and maintained at pH 6.4 or higher. Under these conditions, there is no reaction between ascorbate ad nitrite.—*Griffith Laboratories, Inc., 1415 W. 37th St., Chicago, Ill.*

Circle 34 on Reader Service Card

CHEMICALS

Costly Labeling Problems Solved by New Adhesive

A vinyl-based product, this new spot-label paste offers outstanding adhesion to all types of tin, glass, and plastic surfaces.

Known as Helix Paste #701, it is also resistant to moisture, heat, and chemical fumes. Thus, it eliminates an annoying and costly labeling problem.—*Carl H. Biggs Co., 2255 Barry Ave., Los Angeles.*

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Epon-Base Floor Seal Stands Heavy Traffic

Highly abrasion-resistant, this epon-base floor seal offers a light, semi-lustrous film that is long-lasting

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Photo courtesy of Cities Service Oil Company (Delaware)

Now! Stack 30% higher...load into boxcars too!

The *Clarklift* fork trucks pictured above are demonstrating a new *dual* function. They stack 30% higher than equipment of similar, retracted mast height . . . can *also* drive through low boxcar doors and other tight clearances. It's made possible by Clark's new *Triple* Stage Upright.

Actually, it means you're getting two machines in one. You are able to take better advantage of the *full* height of your warehouse . . . yet, use the *same* fork truck for loading rail cars or highway trucks, low-door elevators, etc. The Triple Stage Upright enables your equipment to *work full time*, and on many *varied jobs* with no stacking height loss, no clearance problems, *no work stoppages*.

A specification sheet showing complete details is available on request. Simply write: Triple Stage Upright, Clark Equipment Company, Battle Creek, Michigan.

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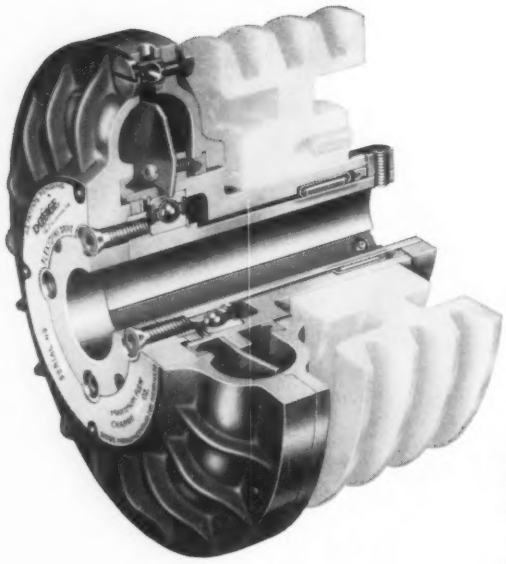
- ☑ Breakage of transmission parts due to instantaneous shock loads?
- ☑ Damage and recurring down-time from overloads?



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THE DRY FLUID DRIVE

It is no longer necessary to accept the destructiveness—the costliness—of conventional starting in the mechanical transmission of power. Flexidyne changes that!

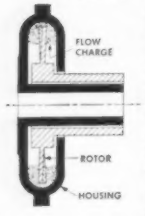
Flexidyne is the new way to start loads *smoothly*—to protect against shock and overload—to save power—all *without any sacrifice of efficiency at full load!*

This revolutionary development is ushering in "the day of the soft start"—which can mean thousands of dollars to you in equipment savings and in better, more economical operation.

Flexidyne is available, off the shelf, in Drives and Couplings. Capacities range from fractional to 1,000 hp. Ask your local Dodge Distributor or write us for technical bulletin.

DODGE MANUFACTURING CORPORATION, 2800 Union St., Mishawaka, Ind.

HOW FLEXIDYNE WORKS



The "dry fluid" in Flexidyne is tiny heat-treated steel shot. A measured amount, called the "flow charge," is contained in the housing, which is keyed to the motor shaft. Inside the housing is a rotor, free to revolve relative to the housing, but connected to the load.

When the motor is started, centrifugal force throws the flow charge to the perimeter of the housing, packing it between the housing and the rotor, which transmits power to the load. Initial slippage is momentary. Housing and rotor become locked together and achieve full load speed without slip and at 100% efficiency.

CALL THE TRANSMISSIONEER — your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer."

DODGE

of Mishawaka, Ind.

under heavy traffic and does not darken with age.

Known as No. 15, it also has high resistance to rubber and friction burns, moisture, and dirt penetration. Equally effective on concrete floors and wood, it is fast-drying and does not require a separate primer. Three coats are recommended.—*G. H. Tennant Co., 721 N. Lilac Dr., Minneapolis.*

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BRIEFS

Float-Type Control, mounted on side of tank, actuates cutoff valve in filling line when liquid reaches desired level. Pressure line connects flow chamber and valve. When hose is disconnected, spillage is prevented by automatic valve in end of hose. —*Aeroquip Corp., Jackson, Mich.* (37)

Track and Platform Scale, combined into a single dial, weighs hanging products, and items on trucks or pallets. Dual-purpose unit, which cuts operating costs, is built to special order only. Gross capacities to 12,000 lb.—*Detecto Scales, Inc., 540 Park Ave., Brooklyn, N. Y.* (38)

Compact Case Stacker mounts wooden, metal, or wire units 3-7 high, or allows them to pass through singly. Equipment (Ezee Up) adjusts for all case sizes, is mechanically operated, and can be installed in existing lines in 15 sq. ft. of floor space. Required headroom is less than 6 ft.—*Lathrop-Paulson Co., 2459 W. 48th St., Chicago.* (39)

Pipe and Coil Brush efficiently removes ice and snow from hard-to-get-at elbows and underparts in ice-cream hardening rooms. Bristles are of black nylon, set into a special tube with 6 ft. handle.—*Braun Brush Co., 88-33 78th St., Woodhaven, L. I.* (40)

Automatic Bread-Pan Greaser handles 3-, 4-, or 5-pan straps. In coating 130 pans per min., it uses only 4 oz. per 1,000 pans. No heat is required. Single control accurately meters grease from unit's 160-lb. reservoir to dispersion heads. Pan guide rails are adjustable for wide range of sizes.—*Mallet & Co., 601 E. General Robinson St., Pittsburgh.* (41)

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4. Teknikan brings out the sharp, wonderful flavor of powdered cheeses.

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Annunciator

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Covers six styles of open and closed types plain and ledge shelving and companion equipment. 7p.—*Alan Wood Steel Co., Oaks, Pa. (67)*

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Complete information on new series of vari-speed pulleys featuring simplicity, precision, and lower cost. Includes illustrations, data on enginering and construction plus charts to simplify selection and installation. 20p.—*Reeves Pulley Div., Reliance Electric & Engr. Co., Columbus, Ind. (68)*

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Design features and mechanical details of pressure reducing valve. 2p.—*Copes-Vulcan Div., Blaw-Knox Co., Erie, Pa. (77)*

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Research results on pump radial loads and stresses. Contains formulas and diagrams. 8p.—*Peerless Pump Div., Food Machinery & Chemical Corp., Los Angeles. (78)*

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Gives uses for new smaller drive and coupling. 2p.—*Dodge Mfg. Co., Mishawaka, Ind. (79)*

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Describes with diagrams and photographs method used for refrigeration without frost or ice formation. 12p.—*Niagara Blower Co., N.Y.C. (80)*

Ceramic Pulleys

Details performance of new permanent magnetic pulleys for tramp iron separation in belt conveyor systems. 4p.—*Stearns Magnetic Products, Milwaukee. (81)*

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New "Built-in" Process Refractometer Assures Continuous... Accurate... Easy Quality Control

The internationally known GOLDBERG PROCESS REFRACTOMETER is designed for the continuous precise, rapid and easy determination of total soluble solids... in turbid and dark-colored concentrates, jellies, jams, pastes, purees, juices, syrups, preserves, milk products ... and in other solutions.

Three models are available in Brix ranges: 0 to 25%, 12 to 72% and 36 to 82%. Any model can be mounted on the side wall of a process vessel, evaporator, vacuum pan, fruit spread cooker, product pipe line or other location where continuous reading is desirable. The refractometer may also be mounted into a fixture that runs onto a track above a row of kettles for sample ladling.

The unique optical system transmits a sharp transition line from light to dark onto the large .5% graduated scale in the focusable eyepiece.

The illuminating unit consists of a 6 volt, ¼ ampere, long-life bulb ... detachable socket and cord.

The compact and rugged refractometer when mounted into the process vessel is vacuum and pressure-tight ... designed to withstand pressure of 20 pounds and temperatures ranging up to 110°C (230°F). The instrument is readily removable from coupling flange.

Instruments are factory calibrated. Recalibration to operating temperature is accomplished by a simple exterior set screw adjustment. A manually-operated wiper always brings fresh product sample to the prism face.

The GOLDBERG PROCESS REFRACTOMETER offers the following important advantages: accurate readings are instantaneous ... withdrawal of sample not necessary... evaporation errors eliminated... readings unaffected by viscosity, foam, air bubbles and pulp... no operator training period is required.

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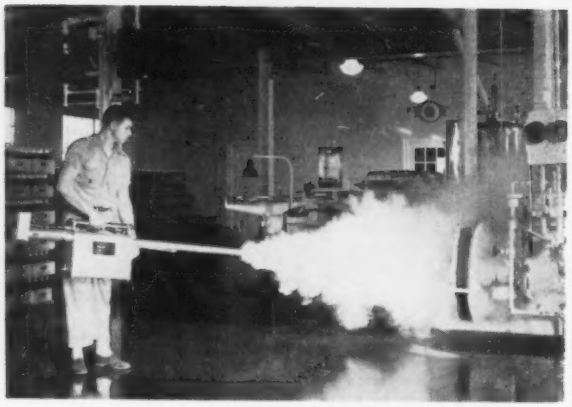

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Gas Scrubber

Describes with illustrations unit for removing solids or liquids entrained in gas or vapor. 4p.—*Centrifix Corp., Cleveland, Ohio. (83)*

Separator

Concerns system for removal of suspended organic matter and chemical flocs from process water by flotation. 12p.—*Chain Belt Co., Milwaukee. (84)*

Air Cleaner

Introduces new electronic cleaner that filters by ionizing particles in the air stream. 8p.—*Minneapolis-Honeywell Regulator Co., Minneapolis. (85)*

Pumps

Describes new series of leakproof pumps for handling corrosive, toxic, radioactive and other "problem" fluids. 4p.—*Chempump Corp., Philadelphia. (86)*

PROCESSING

Metal Mesh Belts

Details various type belts used in processing baked goods. Contains diagrams for application, selection, and tips in installing and operating. Complete data on their construction. 10p.—*Cambridge Wire Cloth Co., Cambridge, Md. (93)*

Centrifugal Pumps

Describes series of stainless steel pumps with specifications and capacity curves. 6p.—*Ladish Co., Tri-Clover Div., Kenosha, Wis. (88)*

Feeder Valves

Gives complete details on rotary vane feeder valves. 2p.—*Sprout, Waldron & Co., Inc., Muncy, Pa. (99)*

Vibrating Screen

Gives complete data and specifications on all types of vibrating screens. — *Syntron Co., Homer City, Pa. (90)*

Flow Indicators

Describes new line of visual indicators for checking flow of liquids and gases. Tempered glass is used for windows to protect against changes as great as 400F. —*Schutte & Koerting Co., Cornwells Heights, Pa. (95)*

Liquid Feeder

New feeder for controlled handling of acids and other corrosive liquids. 4p.—*The Clarkson Co., San Francisco. (96)*

Maintenance Chart

Electric fork truck preventive maintenance chart.—*Lewis-Shepard Products, Inc., Watertown, Mass. (94)*

MATERIALS HANDLING

Rams and Scoops

Describes ram and scoop attachments available for lift trucks. —*Lyster Co., Portland, Ore. (87)*

Space-Saving Drums

Describes new interlocking shipping drums. — *Vulcan Containers, Bellwood, Ill. (89)*

Screw Elevator

Describes new unit with dry shaft drive for protection against oil leakage. 4p. — *Fort Worth Steel & Mch'y., Fort Worth, Tex. (91)*

Fork Lift Truck

Contains details on series of gas-powered fork lift trucks complete with illustrations. 16p.—*Allis-Chalmers Mfg. Co., Milwaukee. (92)*

Magnetic Traps

Introduces new line of stainless steel, full-flow traps for liquid lines. 2p. — *Ladish Co., Tri-Clover Div., Kenosha, Wis. (97)*

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Measuring Instruments

Outline of force- and pressure-measuring instruments for industrial applications. 6p.—*Dynametrics Corp., Burlington, Mass. (100)*

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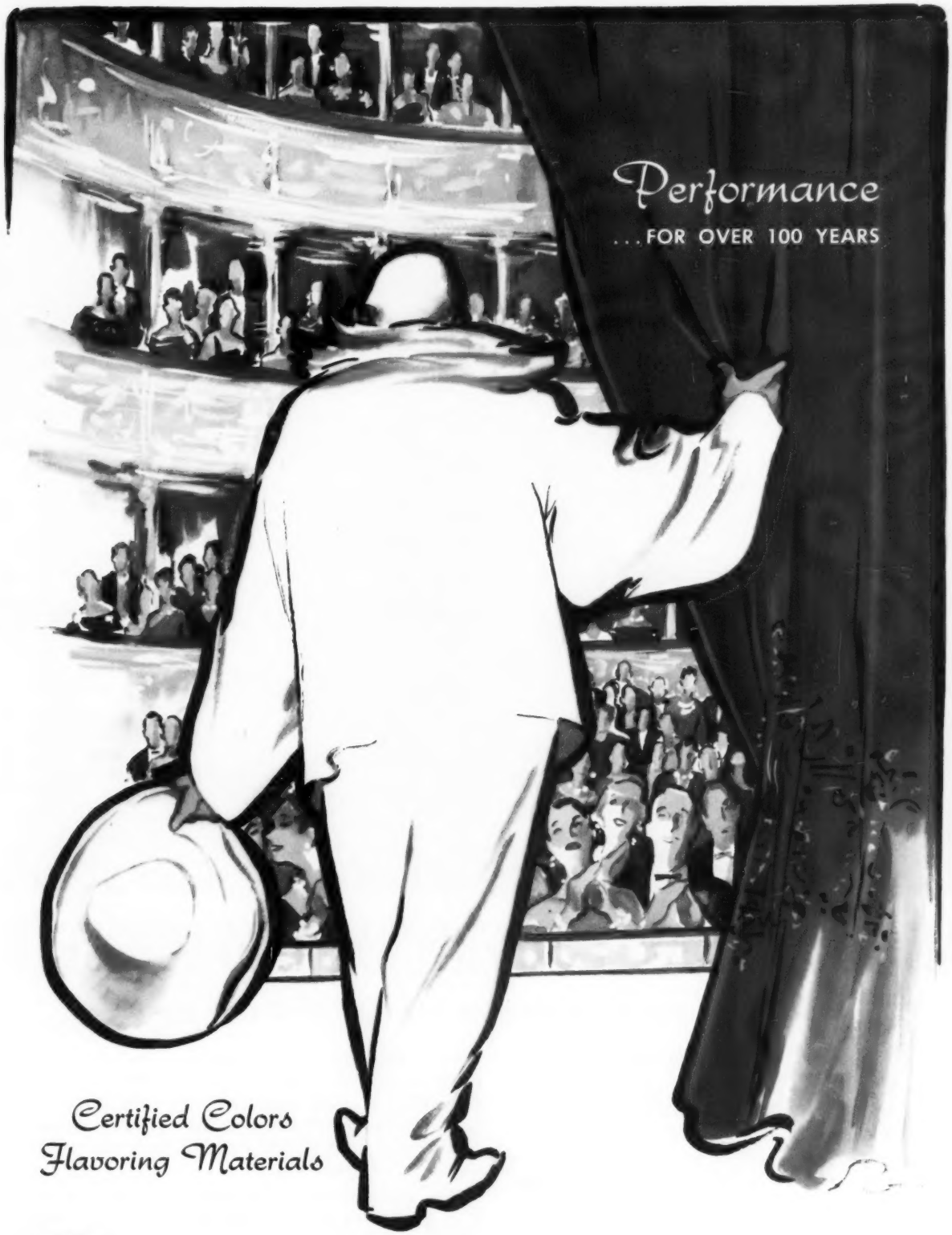
Contains detailed description, engineering information, dimensional drawings and installation layouts for liquid handling assemblies. 24p.—*Jordan Industrial Sales Div., OPW Corp., Cincinnati. (101)*

Mercury Controls

Complete catalog on mercury switch equipped automatic controls. 60 p.—*The Mercoid Corp., Chicago. (102)*

Spectrophotometer

Describes wide variety of analytical application. 4p.—*Coleman Instruments Inc., Maywood, Ill. (103)*



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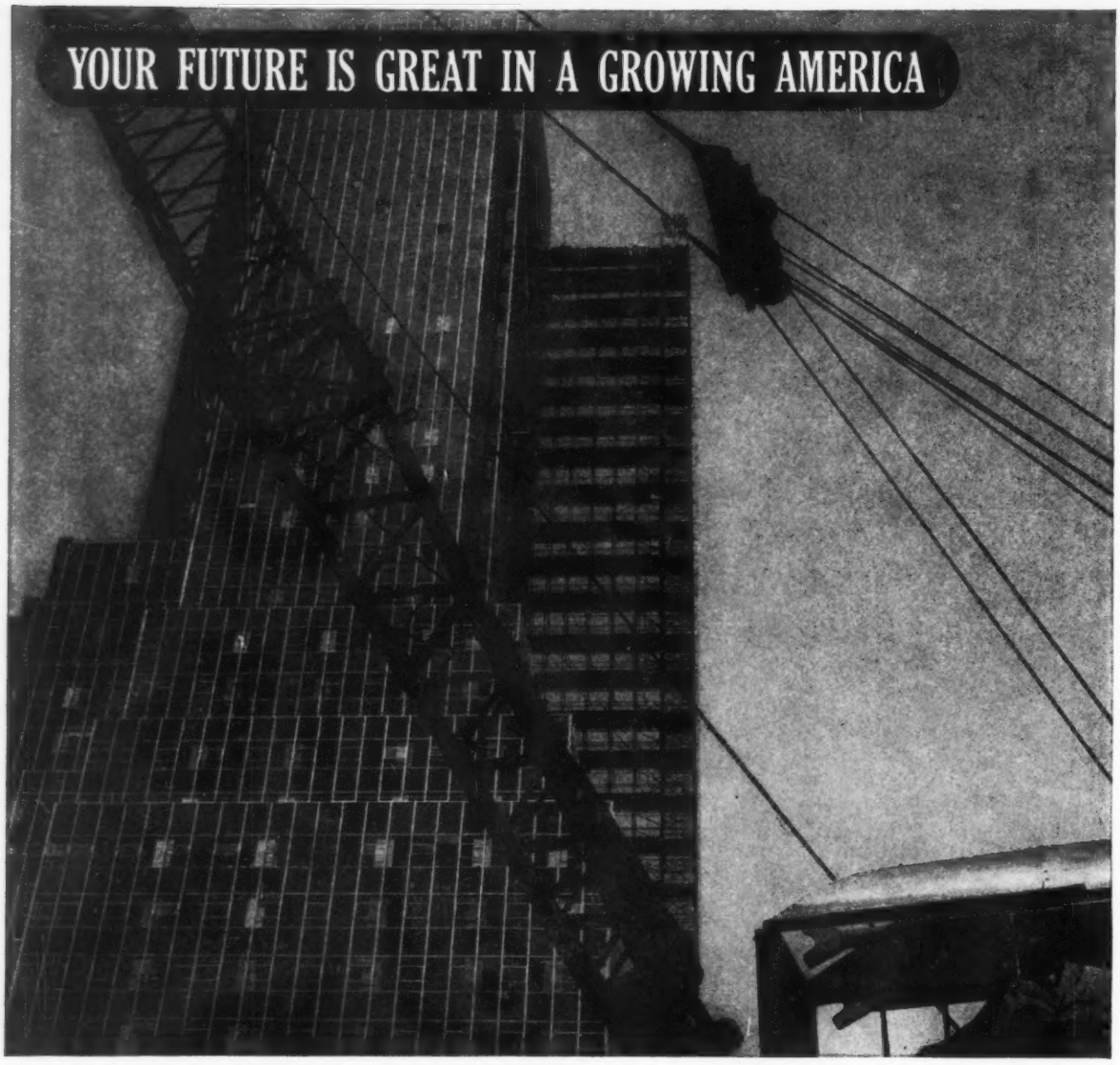

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Photoelectric Controls

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Thermocouple Assemblies

Describes with pictures and charts base metal, small mass, noble metal, and special purpose Thermocouples, also mounting attachments and components. G100-8, 53p.—*Industrial Div., Minneapolis-Honeywell Regulator Co., Philadelphia, Pa. (105)*

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Describes new modular-mount series of lighted pushbuttons. 8p. —*Micro Switch, Freeport, Ill. (106)*

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Describes electrical transmission of turbidity measurements to remote indicators and/or recorders. 4p.—*Bailey Meter Co., Cleveland, Ohio. (107)*

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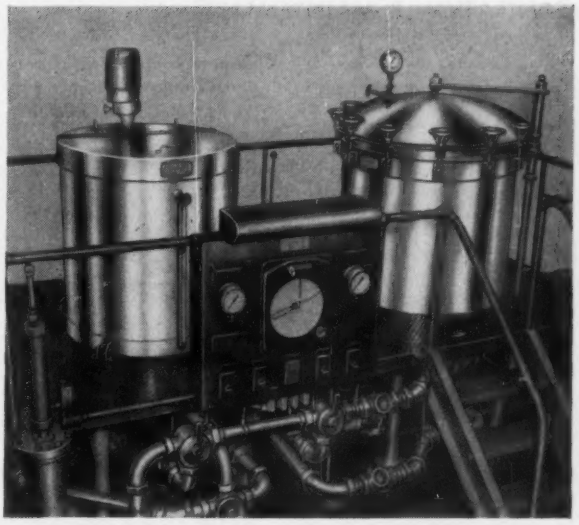

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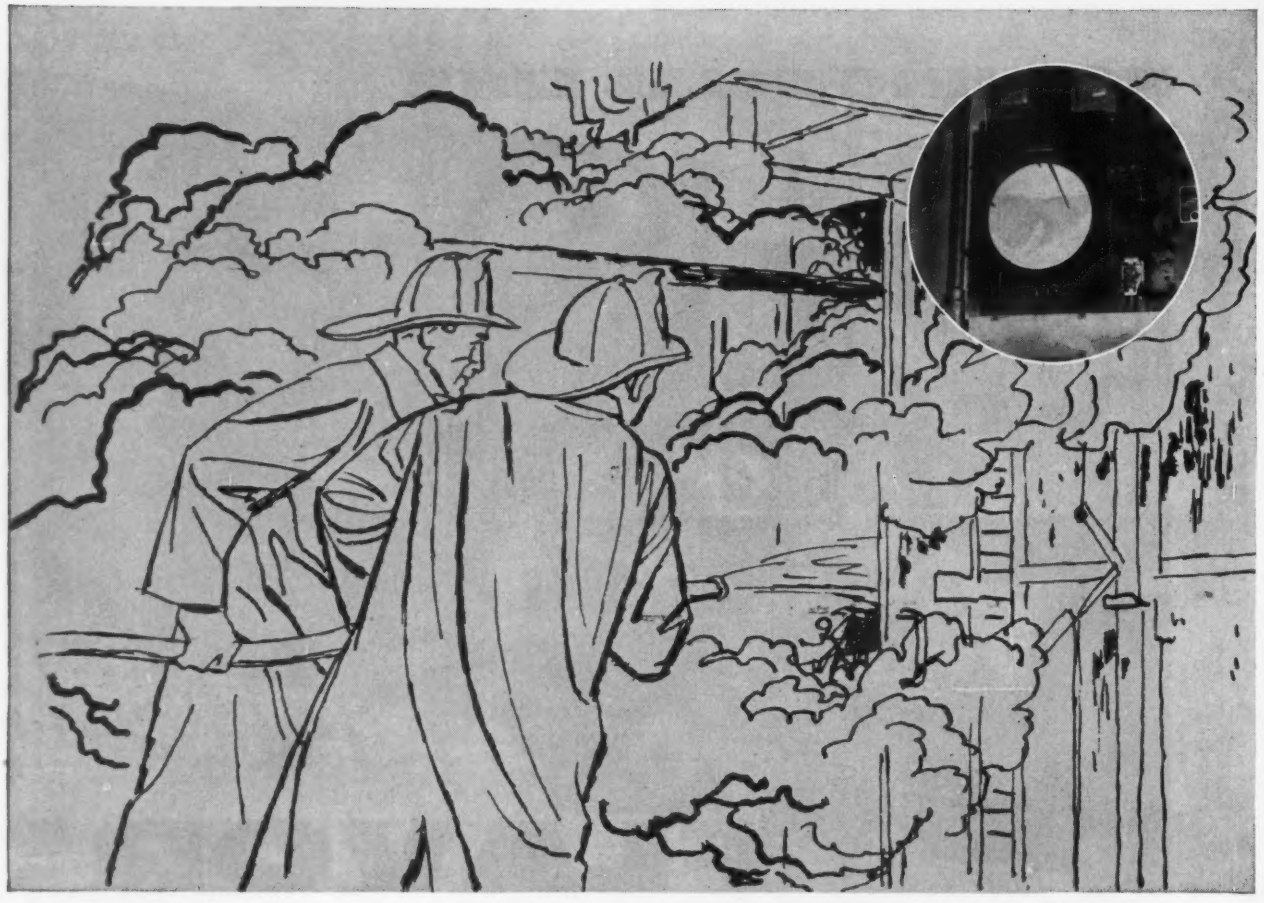

1 On Sunday, March 16, fire broke out in the smokehouse of Bluebird Food Products, Philadelphia. Flames spread from a pan of meat fat to the walls and roof. All instruments and wiring were damaged. Inset shows the Honeywell thermometer-controller that withstood the blaze.

Honeywell service begins when you first decide you need instruments, and continues long after they're installed. It includes:

- Preliminary engineering, even before specifications are written.
- Application engineering for installation and startup.
- Service engineering help from your nearby Honeywell branch.
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AROUND-THE-CLOCK help in emergencies is but one of many Honeywell services that give you extra value for your investment in instruments. Get the complete service story from your nearby Honeywell field engineer. He's as near as your phone. MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa.

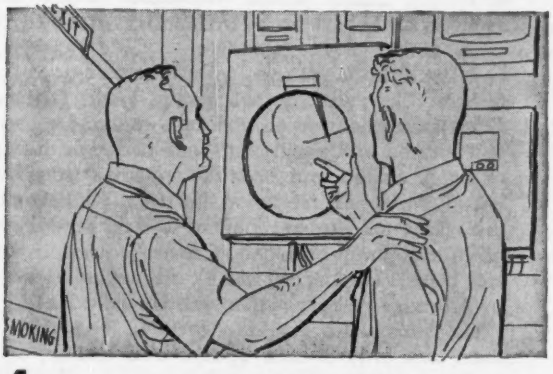
"TRIAL BY FIRE"

proves quality of Honeywell instruments and service

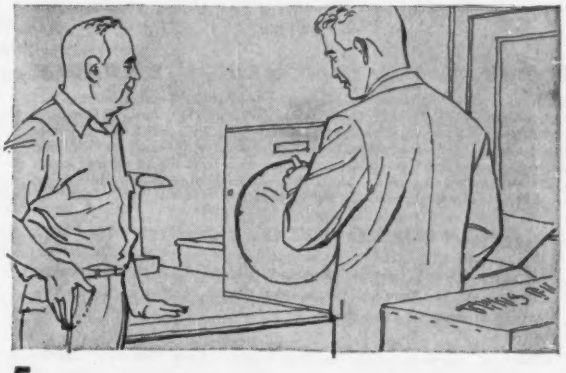
Thermometer-controller scorched in meat plant fire back on job 3 hours after call for service

2 Next morning at 9 o'clock, Mr. Herbert Cook, owner of the plant, called Honeywell's Philadelphia branch for service on the badly-scorched Honeywell thermometer. Two other thermometers were damaged beyond repair.

3 A service engineer arrived promptly from the nearby Honeywell branch. He replaced a door glass and recalibrated the thermometer—the only repairs required. A heavy metal case enabled the instrument to withstand the fire.



4 By noon the service engineer had the Honeywell thermometer back on the job. Only three hours had passed since Mr. Cook had called for service. With repairs to the building and replacement of the two destroyed instruments, plant operations could resume.

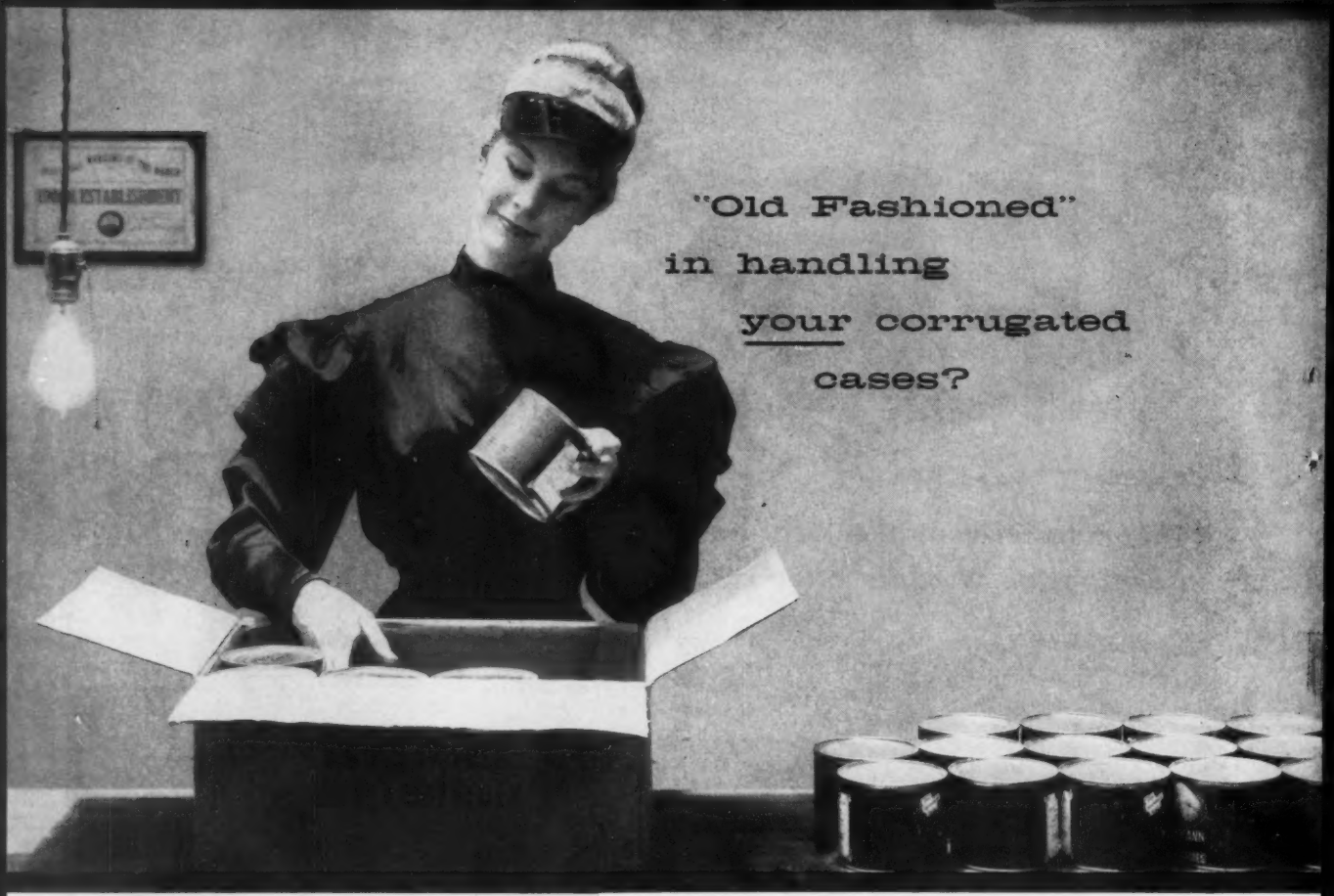


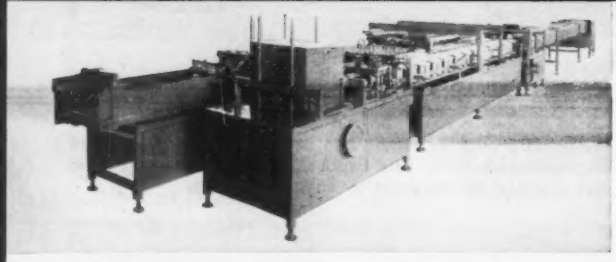
5 Mr. Cook had the destroyed thermometers replaced by Honeywell instruments. He wanted the assurance of prompt service whenever it might be needed again.

Honeywell

H HONEYWELL *First in Controls*

For more data, circle 328 on Reader Service Card





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Packomatics high-speed, continuous-motion case forming, feeding, loading and sealing machine, shown above, oiled the way at the Esso Standard Oil Company plant for faster fully-automatic casing of gallon cans. This is the only machine on the market designed for cost-reducing end-loading style corrugated shipping containers. Custom-Engineered to accomodate cans from the 12 oz. size to the 5-qt. Imperial gallon size, for an almost endless variety of products—from foods, juices and beer to paint, chemicals and cleansers

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equipment feeds, forms, positions, loads, seals, and imprints shipping containers automatically

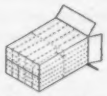
Just stack the magazines with "knocked-down" containers. The rest is automatic. With Packomatic Custom-Engineered equipment, containers are fed out, formed and positioned, end-loaded with cartons or cans, sealed and imprinted 4-sides (serial numbered, if desired) ready for shipment. Packomatics do the whole job—or any part of it. And how they pay off in any plant! End-loaded cases require up to 28% less board. Labor costs shrink dramatically and your packaging line keeps pace with your production line. Your Packomatic line can grow as you grow, too. Start now with a case opener and loader, or case sealer, or imprinter—build it unit by unit into a complete system.

Six 5-qt. cans or gallon cans in 20⅛" x 13⅜" x 9 13/16" case and 20¼" x 13¾" x 8¼" case

Twelve 46 oz. cans in 21" x 13" x 7⅛" case

Twenty-four cartons in 12½" x 10⅝" x 8½" case

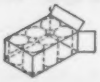
Eighteen 7 & 8 oz. cartons in 20" x 14⅛" x 8⅝" case



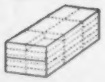
Sixty cigarette cartons
King Size: 17⅞" x 11½" x 22"
Regular: 14 13/16" x 11½" x 22"

TYPICAL CASE LOADING PATTERNS FOR CANS AND CARTONS

Twenty-four 12 oz. cans in 16⅜" x 10 15/16" x 5 3/16" case



Six No. 10 cans in 22 1/16" x 17⅜" x 7⅛" case



Thirty 1 lb. cartons in 16⅛" x 10 9/16" x 7¼" case

Twenty-four cartons in 19½" x 10⅜" x 7" case

Forty-eight cartons in 22¾" x 23½" x 15⅞" case

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EFFECT OF VARYING THE GAP BETWEEN THE OUTER FLAPS OF CORRUGATED BOXES FOR CANNED GOODS. *Published by Fibre Box Association, Chicago 4, Illinois. 27 pages. Price: No charge. Report on laboratory tests indicating canned goods shipments subject to greater damage when box is not completely closed.*

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Self Priming
Less Weight
3A Approved
Fewer Parts
Longer Life
Reversible Operation
Even Flow
Hydraulic Balance
Easy Take-Down
Fast Cleaning
O-Ring Seal
O-Ring Gaskets

It is the ideal pump for all types of liquid or semi-liquid food products. Sizes 20, 35, 50 and 90 GPM available in 39 models. A pump you need not return to factory for repairs.

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Cedar Falls, Iowa, U.S.A. In Canada, It's "ROTO-KING" Pumps

See Our Catalog in Sweet's Plant Engineers File

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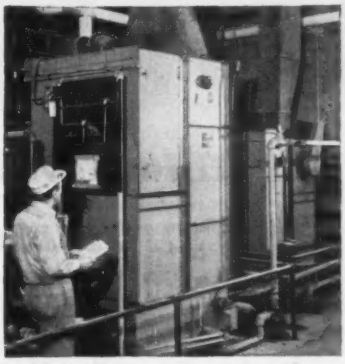
DRY and CLEAN AIR at the RIGHT TEMPERATURE

- to control your product quality
- to protect a critical operation
- to protect apparatus from moisture damage
- to DRY your material or product
- to control packing or storage conditions
- to assure precision in testing or research
- to increase air conditioning capacity



Air Condition by the NIAGARA Method Using HYGROL Liquid Absorbent

This compact method, giving high capacity in small space, removes moisture from air by contact with a liquid in a small spray chamber. The liquid spray contact temperature and the absorbent concentration, factors that are easily and positively controlled, determine exactly the amount of moisture remaining in the air.

Most effective because... it removes moisture as a separate function from cooling or heating and so gives a precise result, and always. Niagara machines using liquid contact means of drying air have given over 20 years of service. The apparatus is simple, parts are accessible, controls are trustworthy.

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Niagara District Engineers in Principal Cities of U. S. and Canada

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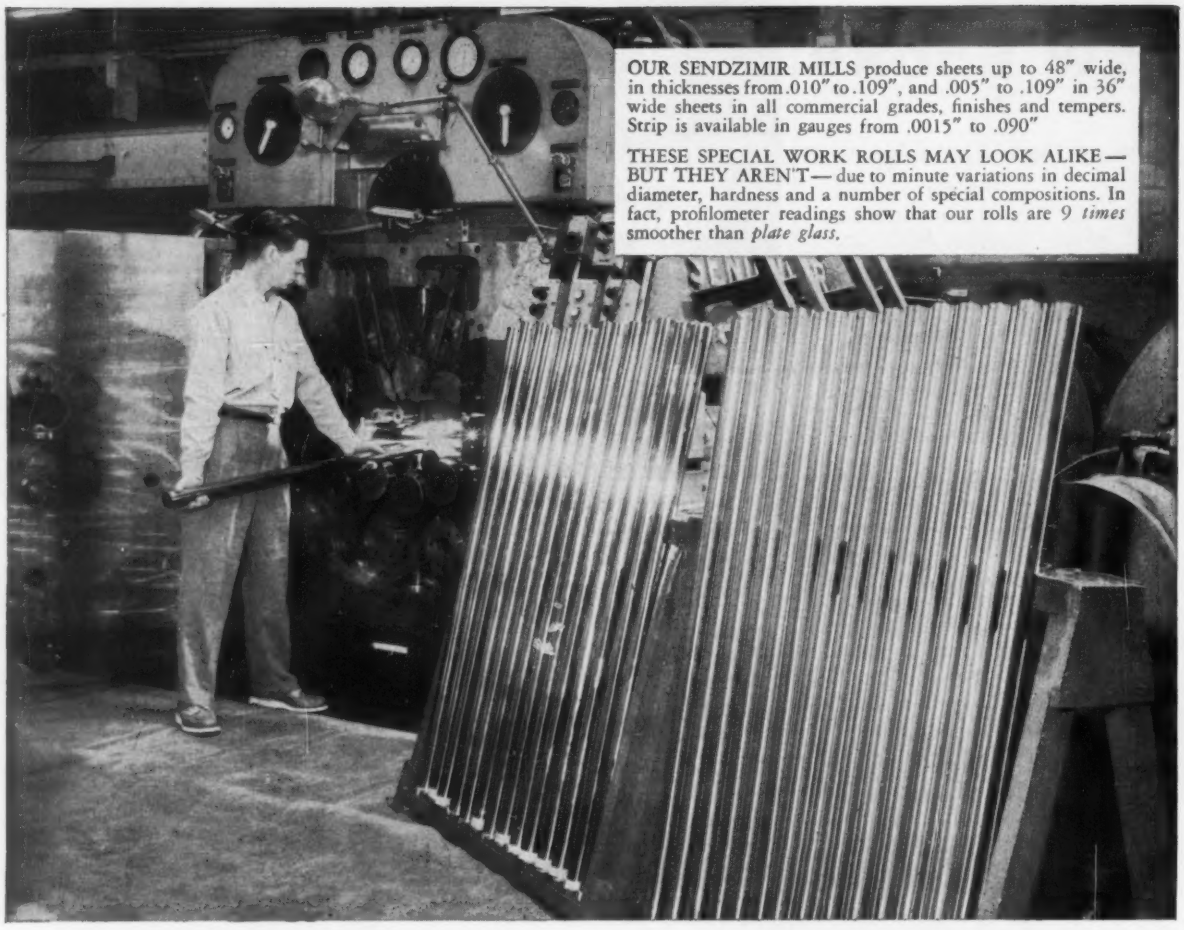

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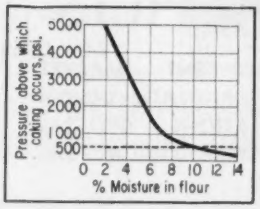

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Poultry-Processing Unit Comprising Cleaner, Adjacent Scalder—H. B. Turner, Timberville, Va. No. 2,820,245.

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Cake Icer Employing Supply Hopper, Distributor, Cylinder, Piston, Synchronizing Means—J. R. Litty, Goshen, N. J. No. 2,821,958.

Fish Filleter Comprising Conveyor, Hollow Casings, Piercing Points, Blades—A. Gradoff, San Francisco. No. 2,822,569.

PRODUCTS

Dry Granular Fondant Having 40-Micron Sugar Fragments Cemented by Partially Dried Sugar Syrup, Microscopic Crystals—California & Hawaiian Sugar Refining Corp., San Francisc. No. 2,824,808.

Meat Cure Containing Dialkali Metal Phosphate, Linear Alkali-Metal Phosphate Polymer—Armour & Co., Chicago. No. 2,824,809.

Meat Tenderizer Comprising Fungal Enzyme, Sodium Chloride, Dextrose, MSG, Pepper, Celery Salt, Edible Oil —Food Industries Co., Dallas. No. 2,825,654.

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Treating Green Coffee to Decrease Chlorogenic Acid, Trigonelline—Verdurin Co., Detroit. No. 2,824,805.

PACKAGING

Seal-Cooling Unit (for Overwraps) Comprising Metal Wall, Wax-Repellent Surface, Package-Contact and Wall-Cooling Means—Stickelber & Sons, Inc., Kansas City, Mo. No. 2,823,729.

Frozen-Food Package Having Longitudinal, Lateral Wrapping Strips That Space Stacked Cartons to Permit Air Circulation—M. J. Lang, NYC. No. 2,824,013.

Closer-Sealer for Paraffined Paperboard Containers — J. A. Zinn, Jr., Chicago. No. 2,822,-653.

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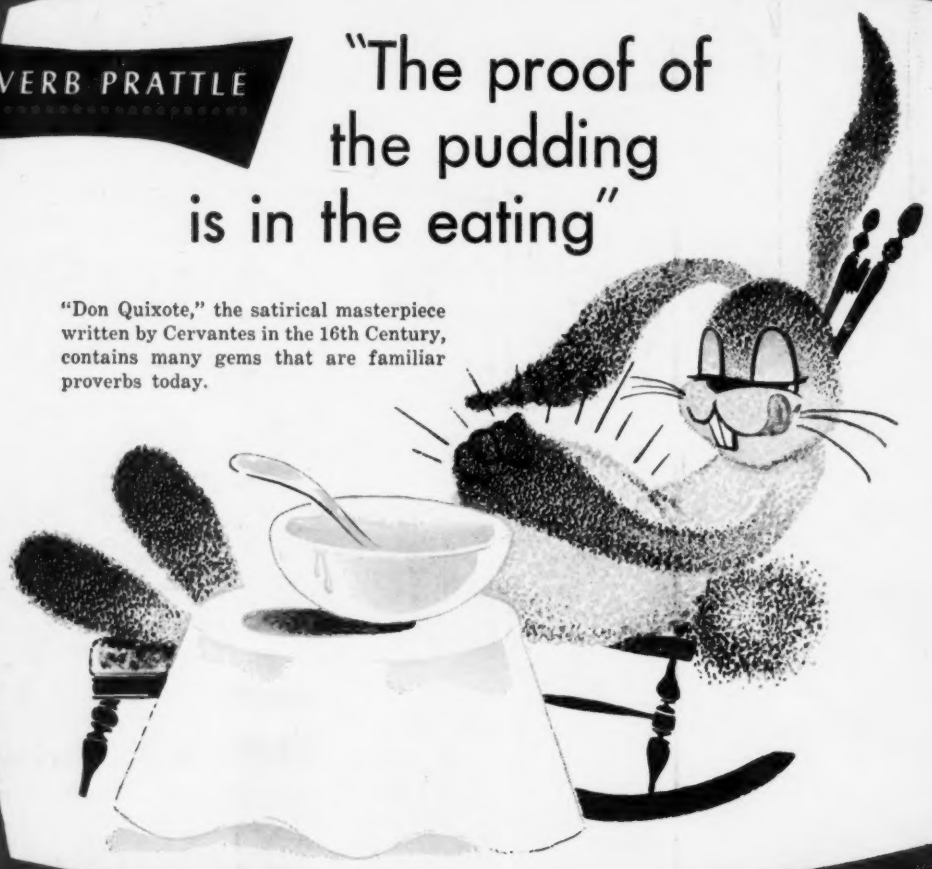

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